

Railway Age

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Store-door Delivery in Sight

THE efforts of the Boston & Maine to make, on its own account, all reasonable use of motor trucks (as well as passenger buses) are being kept up with admirable courage and persistency. Hearings are being held this week in Massachusetts and New Hampshire on the applications of the road for authority to substitute highway operation for railroad trains on nine routes, aggregating about 156 miles of line. Progress is being made also in directions not dependent on governmental deliberation; and two definite steps have just been authorized by the directors of the road; (1) to run trucks on the highway in place of local freight trains, for l. c. l. freight, and (2) to establish store-door delivery and pick-up service in three cities—Boston, Lawrence and Lowell. Some details of these proposals are given in our news columns. Station-to-station service, parallel to busy railroads, saving many hundreds of costly steam locomotive miles, is already in operation by the Pennsylvania, the New York Central, the Erie and others. This, under favorable circumstances, is a comparatively simple experiment. Store-door delivery, however, is a new line of endeavor for an American railroad. Friendly co-operation of shippers and consignees is an absolutely essential condition, for unless the new venture can have a good share of the business of a given city or district, it cannot be a satisfactory success. The Boston & Maine, however, has already done a good deal in the way of getting really acquainted with its patrons, and its local public may be expected to take an intelligent interest in this very useful experiment. That in crowded streets the consolidation of wagon services to and from freight stations can produce marked economies is self-evident; and such an experiment in three cities will be watched with great interest by many people all over the country, from Maine to California.

Strike While the Iron Is Hot

THE successful convention of the Purchases and Stores Division of the American Railway Association, which was held in St. Louis this week, is of value to the railroads in proportion as the purchasing and stores officers apply the lessons taught. Will the officers concern themselves at once with the findings of their committees by way of correcting the weaknesses disclosed in methods, by bringing themselves under the guidance of the recommendations accepted, and otherwise in employing the practices adopted as being plainly in the direction of increased efficiency and improved service? Will they, in effect, strike while the iron is hot? The purchasing and stores departments of railroads have made remarkable progress in recent years. The president of the American Railway Association himself is authority for a declaration in no uncertain terms that they are to be commended for changes that have taken place in the procuring, handling, distri-

bution and recovery of materials and supplies in the direction of lowered costs and improved service. Numerous statements in the reports presented at the meeting attest to the soundness of this declaration. The accomplishment of a single road in reducing its stock from 150,000 items to approximately 80,000 by simplification is only typical of these disclosures. With the enviable opportunity to render a signal service to transportation and win credit for themselves that is offered in the intimate and responsible connection with expenditures which reached \$1,343,000,000 in 1924, an expenditure which represents approximately 37 cents out of every dollar earned by the railroads, purchasing and stores officers will do well to let no time elapse in adopting those suggestions and recommendations which look toward greater efficiency and more economical administration of their departments.

Association Work Develops Initiative

THE railroad industry in common with almost every other industry or business group is represented by a large number of associations, each dealing with some well defined technical or organizational group of problems. The very number of these associations has subjected them to adverse criticism on the ground that they are mere wasters of time which should not be countenanced by railway executives. The growth of the association movement arises from a very real need for the existence of such organizations in industry, the seat of which may be found in the constantly growing intricacy of industrial affairs. This demands broad co-operation between the individuals for the effective maintenance of the position of the industry or business group as a whole. This is no less true with respect to other industries than it is with respect to the railroads. Each of the so-called minor associations, of which there are several in the mechanical department and also several whose principal interests lie in the maintenance and engineering departments, serves a useful function in bringing about a more general understanding of the common problems of one unit of the railroad organization, and of the most effective means of attacking them. But there is a more direct effect of association work which is of immediate benefit to the railroads who encourage their officers and foremen to take an active part in the affairs of these organizations. This is the broader viewpoint which comes from direct association and competition with others who are leaders in their field. It gives an opportunity for at least a temporary survey of the problems which each individual has been scrutinizing at close range throughout the year, from a height at which a better perspective is possible. This perspective is one of the essentials for the effective exercise of initiative by the individual. The activities of association work both during the year and at the annual conventions are effective means of developing confidence in one's own ability and knowledge of his field or in bringing sharply to his mind his weaknesses so that he may

remedy them. The road which discourages its foremen and officers from actively participating in the work and meetings of the associations in which they logically have an interest, is missing one of the best opportunities available for the development of its own men,—an opportunity which few roads make any attempt individually to supply in any other way.

Consolidation in Great Britain

THE British railways are not finding the problems of organization incident to their consolidation into four large systems so easy of solution. Changes in personnel have been rather frequent and modifications in the form of organization only slightly less so. The British railways, as is generally known, were formerly organized for the most part on a strictly departmental basis. With the consolidation, however, one or two of the lines have adopted a modified form of divisional organization. Now it is proposed that another form of organization should be tried—departmental, but placing each department on its own responsibility, crediting it for services it performs and charging it for services rendered to it by other departments. The passenger traffic manager would collect all the passenger receipts and the freight traffic manager would collect all freight receipts. Out of these sums, each would have to pay the expenses of his own department and in addition a certain sum to the operating department for each car-mile or ton-mile. The operating department, in turn, would have to pay the mechanical department and the maintenance department for services performed. The determination of charges and credits for each service of one department to another would be left to the chief executive. This plan of organization may sound rather fanciful. Yet it is indicative that the rapid compulsory consolidation of the railways has brought problems of organization which are serious enough to warrant consideration even of quite radical schemes for their solution. As our London contemporary, the *Railway Gazette*, says: "Quite a number of railway officers are now of the opinion that the compulsory grouping of British railways all at once into such large concerns is one of the greatest mistakes that has ever been made in the history of British railways, but, as Sir Henry Thornton says, 'You cannot unscramble scrambled eggs.'"

Standardization, the Need of Electric Traction

AT the annual meeting of the American Institute of Electrical Engineers, held on May 15 at the Engineering Societies Building, New York, the subject "Steam Railroad Electrification From the Executive's Standpoint" was discussed in a manner quite apart from what might have been expected from the same kind of a meeting some time ago. The steam locomotive was not relegated to the scrap heap with undue haste. The advantages of electrification were pointed out and some of the requirements, particularly the need for standardization in the more basic parts of the work, were strongly emphasized. The so-called "battle of the systems" has apparently been dropped from such discussion for all time. The development of large connected power systems and their relation to electrification was also brought out. The interest manifested in the meeting was clearly reflected in the fact that every seat in the large hall was taken and many were standing, and this in spite of the fact that an overflow meeting of the New York Railroad

Club took place on the same evening. The key note of the speakers as directed toward electrification was the need of standardization as a means of preventing heavy losses during the extensive developments of electric traction. It would be difficult to stress this particular point too much, for, if electrification is to progress, it is plain that it cannot be through scattered and dissimilar systems and voltages; some of the fundamental and basic construction can be and should be standardized. For example, it should not be an impossible thing to standardize trolley construction, kind of current and voltage used. Recent designs of electric locomotives have shown that it is quite practical to use an alternating current trolley with direct current motors by means of intermediate machinery. That some system of trolley construction and voltage be adopted as standard, is of utmost importance as otherwise enormous economic losses will result from unrelated systems as electrification advances. Fortunately the manufacturing companies have seen the light and there are excellent prospects that those most deeply interested in the matter will be able to bring about some preliminary steps of standardization. With this once accomplished and some system of interconnected power made available, the strides which will be taken by electric traction will be substantial.

Wider Diffusion of Railway Securities

ALL the major troubles of the railways during the last twenty years have been due to burdensome and restrictive regulation—in other words, to regulation which has tended to increase their costs of doing business and at the same time to deprive them of opportunity to make sufficient earnings to pay these costs and have enough net return left to pay adequate interest and dividends on the investment. Serious mistakes have been made in the management of various roads but, on the whole, the management has been honest and efficient.

The policy of regulation applied has been very largely or mainly due to the belief of most of the people of large sections, especially the west and south, that the railways are owned and managed by and in the interest of a comparatively few bankers and other rich men in the east having their principal headquarters in Wall Street. The employees of many roads and the traveling and shipping public of large sections have thought that any burden they put on the roads and any restrictions of their profits that were effected by reductions of their rates were just so much gained at the expense of capitalists who had too much wealth and power already, and who therefore could easily stand the losses consequently incurred by them.

These views are not so widely prevalent as formerly. They are, however, still much too widely prevalent among railway employees and the people of rural communities. They must be corrected if a fair and constructive policy of regulation is to be secured and permanently maintained.

There are two methods which may be used to correct them. Both of these methods should be more extensively and effectively employed than they have been in the past. One of these is educational work to make employees and the people generally understand why it is to their own interest to have the railways prosper almost regardless of their ownership and control. The second method is that of securing a wider diffusion of the ownership of railway securities, especially stocks, and the election of more directors who actually live in the territories served by the railways and who know local conditions and sentiment. The Class I railways have about a million

stockholders and fiduciary institutions have vast investments in their bonds, but their securities are not distributed widely enough in their respective territories.

The public utilities of the country have achieved, greatly to their advantage, remarkable success within recent years in increasing the amount of their securities owned by their employees and customers. Public utility managers apparently are unanimous in the belief that this has greatly improved their relations with their employees and customers and in consequence has improved regulation. The railways have done relatively little to increase employee and customer ownership. The *Railway Age* recently inquired of the presidents of 34 large railway systems what, if any, plans their companies had adopted to promote employee and customer ownership. The information received in reply to this questionnaire is summarized in an article published elsewhere in this issue.

It would appear that almost none of the railways have adopted plans especially to promote the purchase of securities by their customers. A notable exception is afforded by what the New Haven recently did in marketing an issue of bonds to both its patrons and employees. Fourteen important companies have plans for co-operating with their employees in buying their stock. The Pennsylvania in January had 16,252 employees who were stockholders and who owned 69,470 shares of its stock. This is the largest amount of stock of any railroad owned by its employees. Striking evidence that employees of a successful railroad company will buy its stock if given a good chance was afforded by a recent experience of the New York Central. It offered 35,000 of its shares to employees at \$110 per share. The subscriptions received were so large that the amount set aside for employees was increased to 68,747 shares. Within a month after the first offer of stock had been made 41,570 employees had entered their subscriptions for 96,900 shares.

Every railway needs among its employees and patrons men who will be so directly and selfishly interested in its welfare that they will publicly and strenuously resist efforts to cause it to be treated unjustly. No stronger incentive could be given men to do this than to get them to become owners of the road's stock, and thereby to realize that whatever tended to prevent the road from earning a fair return would tend to destroy the value of their investment. Many people in New England own securities of the New Haven road, and therefore the discontinuance of its dividends and the subsequent imperilling of its solvency aroused deep interest and feeling in its territory. On the other hand, few western people own securities of western roads, and a great majority of the directors of western roads are eastern men. In consequence while western people have taken an acute interest in the passenger and freight rates they have had to pay they have, during the last ten years seen with great equanimity a large part of their railways become bankrupt and most of the rest of them forced to reduce or cease paying dividends.

The development of the west has been made possible by the railroads, and yet many or most western people regard the roads largely as a means used by eastern financiers to prey upon western industry and agriculture. They are encouraged in this belief by many railway employees acting under the influence and inspiration of radical labor leaders. On the other hand, most of the eastern financiers who sit upon boards of directors of western roads know so little of conditions in the west, of sentiment there, and the causes and remedies for this sentiment that they are a hindrance rather than a help to the managements in dealing with it. There was at one time good reason why practically all of the securities of southern and western roads were owned in the east, but

this has ceased to be the case, and the welfare of all concerned would be promoted by a large increase in the amount of securities of southern and western roads owned in their territories and in the number of their directors living and doing business along those lines.

To secure a wide distribution of the securities of the railways among their employees and patrons would be a task of great difficulty. Thus far, however, the solution of the railroad problem under a policy of government regulation has proved a task of such enormous difficulty that it has not yet been accomplished, nor can it be said that it is yet near accomplishment. The experience of the last twenty years has demonstrated that the relations between the railways and the public which caused effective regulation to be adopted were such that nothing less than a revolution in them was required to make possible the continuance of private ownership and successful private management. That revolution in the relations between the railways and the public has begun. Their relations are much better than they formerly were. But the required revolution in them is still far from having been finished. No class of persons so much needs to learn this as the eastern financiers. The officers in direct charge of the management of the railways know what the situation is, but the matter of securing a wider diffusion of the ownership of securities is one of finance, and it can hardly be denied that on most railways questions of finance are largely settled by eastern financiers. In the interest of railway employees and patrons, and of the present owners of railway securities plans should be adopted which would give every railway employee or patron an opportunity, an invitation and an incentive to invest in the securities of the railway for which he works or which serves him.

Have a Locomotive Maintenance Policy

THE question of locomotive maintenance policy most frequently discussed is the locomotive mileage which should be secured between shoppings for classified repairs. This question comes up from time to time on every railroad. The discussion, however, is usually confined to an exchange between the mechanical and operating departments when locomotives fail to make the standards of mileage or time set up as guides in judging the efficiency of the mechanical department. It seldom goes into consideration of the soundness of the policy underlying the established standards.

There are two main objects of a locomotive maintenance policy; first, to keep the power available for service for the largest possible proportion of the time and, second, to obtain the most service per dollar of maintenance and handling cost. A careful reading of Mr. Sillcox's paper before the spring meeting of the American Society of Mechanical Engineers this week, an abstract of which appears in this issue, will indicate the number of factors which must be considered before it can be said with assurance that an economically sound policy has been established. It will also be evident to the reader of this paper that the control of these factors does not lie entirely within the province of the mechanical officer; there are important matters in which executives must co-operate. He must, of course, be guided by the opinion of his mechanical officer in his action, but the responsibility is his none the less.

One of the important factors in determining the economical maintenance policy suggested by Mr. Sillcox is the ratio of running repair costs to total maintenance costs. The correct ratio will undoubtedly vary with the conditions obtaining on different railroads, but it is self-

evident that there must be some ratio under which more service time will be obtained at less service cost than under any other. Some of the local conditions affecting this ratio are the relative capacity and character of engine terminal and back shop facilities. Even these conditions, however, are not necessarily fixed. It will pay any management in considering plans for future shop and terminal developments to go carefully into the relative merits of centralized and decentralized back shop facilities, both because of their bearing on administrative economies, labor conditions, future expansions, etc., as well as their bearing on this matter of the ratio between heavy and running repairs.

It is not the purpose here to go into a further discussion of Mr. Sillcox's paper, but merely to indicate the breadth of the questions involved in establishing a correct and economically sound locomotive maintenance policy and the need of controlling to a greater degree than is usually done some of the underlying conditions which are generally accepted as unchangeable. This suggests an opportunity for the live mechanical officer with sufficient vision to see the possibilities for a broad and deep study of his problem as a whole, rather than as a group of problems pertaining to a number of isolated points, to develop a plan to meet the future motive power maintenance requirements of his railroad in such a way that faulty conditions imposed on him by the past may be gradually overcome to the benefit of the property as a whole. Few executives have time to study or are capable of understanding the detail problems of the mechanical department. They can, however, appreciate the economics of a broad policy and of a well-considered plan for future extension of facilities for carrying it out, if the main objectives of the policy are more and cheaper locomotive service.

Increasing Capacity of Multiple Tracks

SEVERAL roads have increased the capacity of congested sections of multiple track lines economically by signaling one or more of the tracks for train movements in either direction. The Burlington has for years made a regular practice of running passenger and fast freight trains around slow freight trains by diverting the faster train to an idle section of the opposite track under train orders and protected by manual block signaling on the reverse track. Several roads with crowded stretches of three-track lines near terminals have materially increased their capacity by signaling the center track for movements in either direction, allotting certain hours in the forenoon for inbound movements and the remainder of the day for outbound moves. The Illinois Central has in service 25 miles of three-track line on which the center track is signaled for traffic in either direction; it is used to the best advantage by the dispatcher and towermen to operate fast trains around slower ones and keep all trains moving. On the Pennsylvania congestion on a stretch of three-track road was eliminated by signaling the center track both ways, thereby postponing an expenditure of \$900,000 until the traffic increases approximately 23 per cent. Several other such installations have proved satisfactory on this road.

The Illinois Central has one of the most intensively signaled stretches of double track in this country between Otto, Ill., and Gilman. Both tracks are signaled in both directions with block spacings permitting following moves at one-mile intervals. There is no normal direction of traffic for trains can be moved with equal facility in either

direction on either track. With crossovers in either direction at both ends and at four intermediate points, all handled by interlockings, run-around movements are being made constantly entirely by signal indication. This signaling has so increased the capacity of the line by keeping all trains off the sidings that the building of a third track can be postponed indefinitely.

For years operating officers have realized the possibilities of using idle tracks by running trains against the normal direction of traffic, but the delays and danger attendant on the authorization of such moves by train order has limited the use of such methods of operation. The direction of train movements by signal indication and under signal protection is to a large extent removing this limitation so that signaling is being given more consideration by those who are studying methods of increasing track capacity or eliminating delays.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

America's First Railroad, by Samuel H. Church. Illustrated historical sketch of Pennsylvania Railroad. 12 p. Pub. by Pennsylvania Railroad, Philadelphia, Penna.

Comparison of Transportation Costs by Rail and via Barge Canal, compiled by Bureau of Railway Economics. Its Miscellaneous series Bulletin No. 36, 16 p. Pub. by Bur. of Ry. Econ., Washington, D. C. Apply.

Education, the Machine and the Worker, by Horace M. Kallen. Includes consideration of B. & O. Plan. Review, in N. Y. Times Book Rev., May 17, 1925, p. 6, by Silas Bent, includes outline of D. & H. Plan, also. 204 p. Pub. by New Republic Pub. Co., New York City. \$1.

Finance Reports, December, 1923-April, 1924, by U. S. Interstate Commerce Commission. Vol. 86 of I. C. C. decisions. 1002 p. Pub. by Govt. Print. Office, Washington, D. C. \$2.25.

Preliminary Statement of Capitalization and Income, Class I Steam Railways in the United States, Year Ended December 31, 1924. Statement No. 2590 (1st of series). 33 sheets. Pub. by Govt. Print. Off., Washington, D. C.

Thirty-Seventh Annual Report of the Statistics of Railways in the United States for the Year Ended December 31, 1923, prepared by Bureau of Statistics, U. S. Interstate Commerce Commission. Latest "Blue Book." 311 p. Pub. by Govt. Print. Off., Washington, D. C. \$1.50.

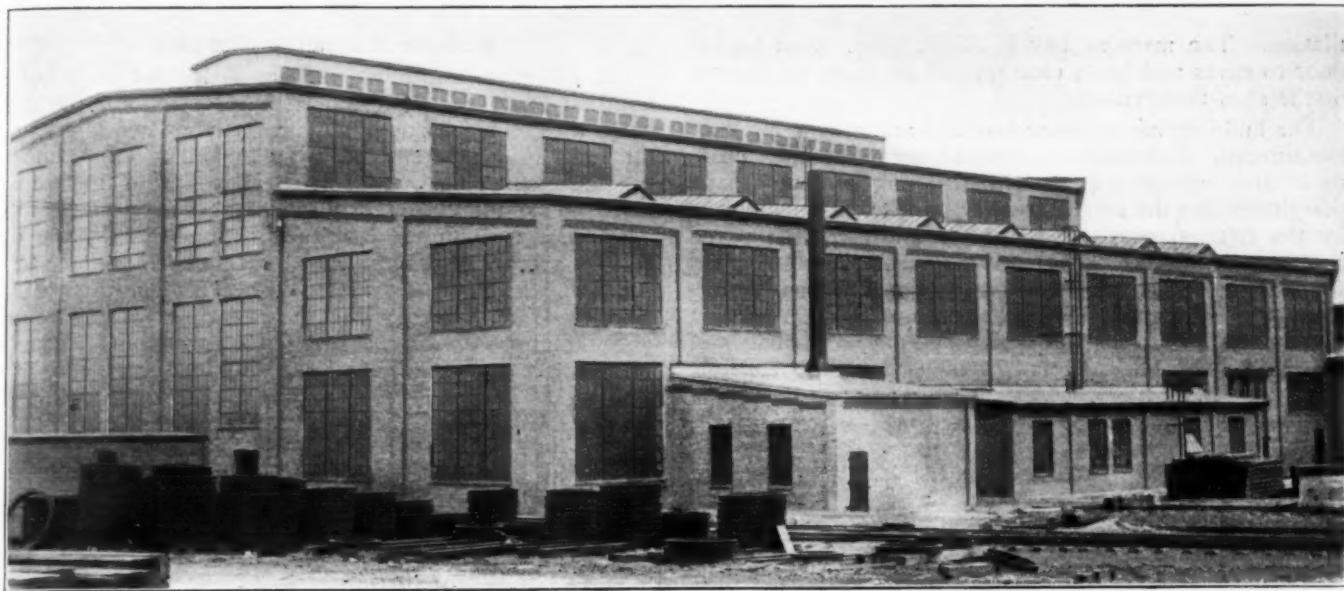
Wholesale Prices 1890-1923, compiled by Bureau of Labor Statistics, U. S. Dept. of Labor. Bull. of U. S. Bur. of Labor Stat. No. 367. Introduction, p. 1-6, reviews history of these price bulletins, and method of computing index numbers. 270 p. Pub. by Govt. Print. Off., Washington, D. C. Apply Bur. of Labor Statistics.

Periodical Articles

Shippers' Regional Advisory Boards, by Asa S. Colton. Part I, of 3 parts in his series on Traffic Associations. *Shipper & Carrier*, May, 1925, p. 13-16, 49.

Story of the Burlington Railroad, by W. W. Baldwin. Illustrated. *Shipper & Carrier*, May, 1925, p. 5-11, 61.

Where Railroad Management Is Failing, by James M. Campbell. *Forbes*, May 15, 1925, p. 176-190.



Rear View of the New Boiler and Tank Shop Showing the Annealing Furnace Wing in the Foreground

New Northern Pacific Boiler Shop Is Well Equipped

Recently completed facilities at Livingston provide adequate capacity for work on all locomotives in central district

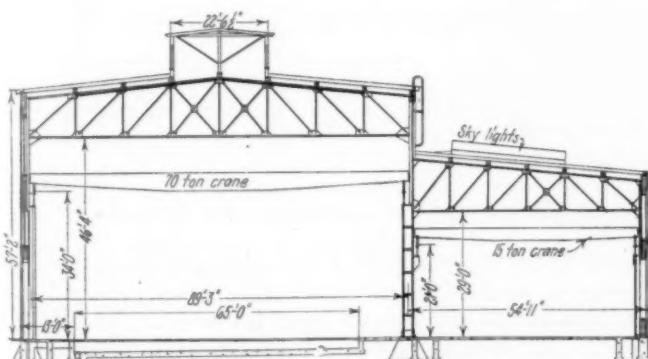
By Bernard Blum
Engineer Maintenance of Way, Northern Pacific, St. Paul, Minn.

THE NORTHERN PACIFIC has recently completed and placed in operation a boiler and tank shop in conjunction with the locomotive facilities at Livingston, Mont. Heretofore the boiler work at Livingston was done in one end of the machine shop

the size of boilers on modern locomotives the facilities for handling this class of work at Livingston were not conducive to the securing of maximum economy. Mallet helper service is maintained over the Bozeman hill between Livingston and Bozeman and over the Rocky mountains at Butte and Helena. The large boilers on this class of power greatly increased the problem of handling the boiler work at Livingston and comprised an important factor in the securing of authority for a new boiler and tank shop at that point.

About two years ago, anticipating the construction of the new shop, the power plant was enlarged by adding a 300-hp. Badenhausen water-tube boiler fitted with a chain grate stoker for burning the sub-bituminous coal now being obtained from the company's large strip mine recently opened south of Forsyth, Mont.

The new building lies on the opposite side of the transfer table from the machine shop and adjoins the car shop. Nine locomotive tracks, one of which runs through the building, are provided in the erecting shop and an adequate machine bay with a 15-ton electric traveling crane adjoins the erecting shop. The erecting room is 89 ft. 10 in. by 196 ft. and the machine bay is 54 ft. 4 in. by 196 ft. The erecting shop is 57 ft. 2 in. high from the floor to the eaves and has a clearance of 46 ft. 4 in. from top of rail to bottom of roof trusses and has a 70-ton crane serving the full length of the room. The roof has a monitor 10 ft. high over practically the entire length of the structure for additional light and for ven-



Cross Section of the New Shop

where the space available was not sufficient to permit the handling of as many locomotives as was desired and made it necessary to create considerable dead-engine mileage in transferring the locomotives from the central district to one or the other of the two other principal locomotive repair shops on the system at Brainerd, Minn., and Tacoma, Wash. Furthermore, with the increase in

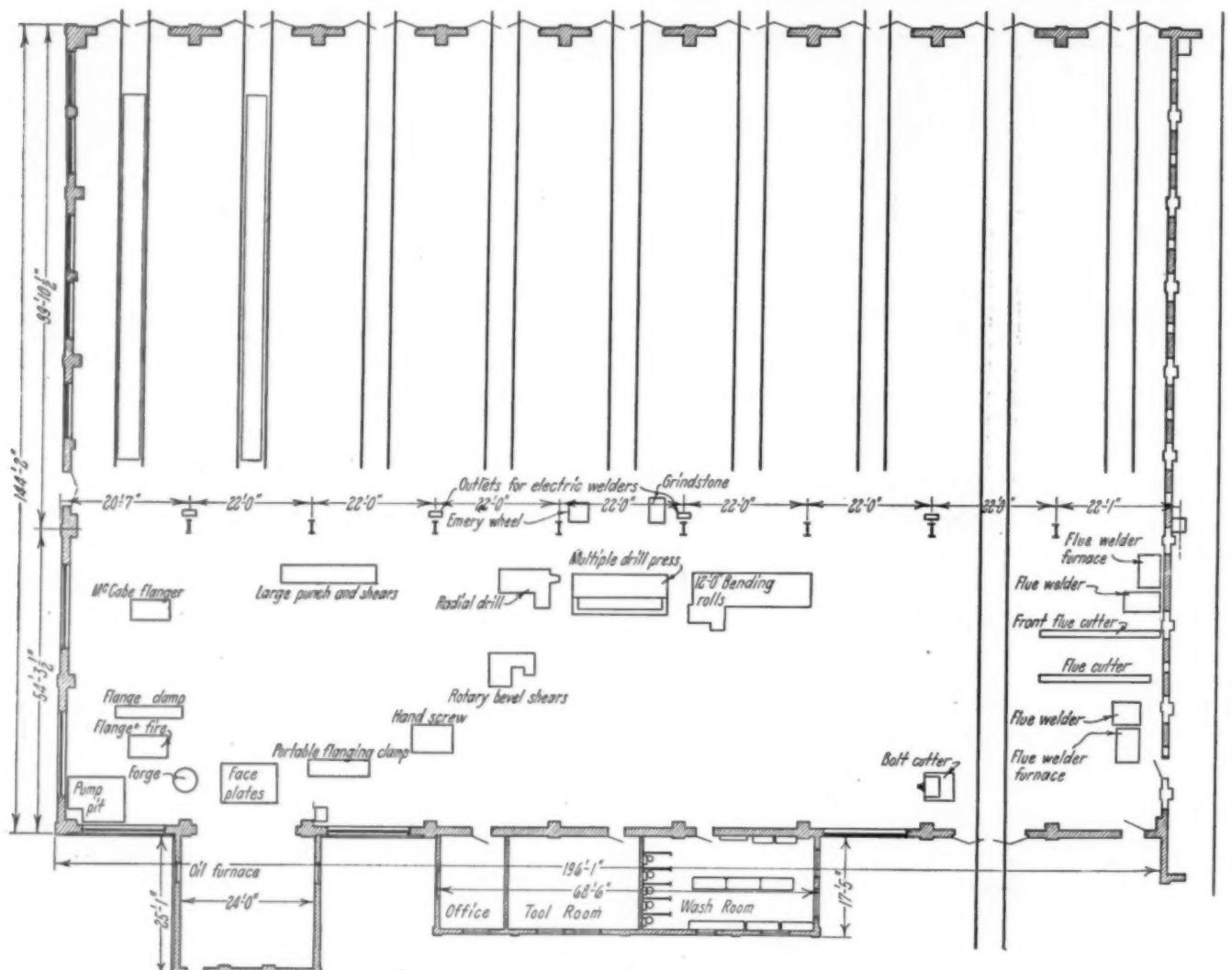
tilation. The machine bay is 37 ft. 3 in. from top of floor to eaves and has a clearance of 29 ft. to the bottom of the steel roof trusses.

The building has concrete footings and a concrete floor throughout. The bricks in the wall are a Montana product. Steel columns support the steel roof trusses and the girders for the traveling cranes. The roof, supported by the trusses, consists of wooden purlins, rafters and roof boards covered with pitch and gravel roofing. The foundation is a coarse glacial drift gravel which is frequently encountered in central Montana, and in making the excavation for the foundations an excellent quality of aggregate was obtained that was used in the concrete

Modern Annealing Furnace

An oil, plate annealing furnace is located in a brick addition 26 ft. 10 in. by 25 ft. 1 in. adjoining the machine bay. This is supplied with oil from two large fuel oil tanks in a concrete cellar located outside the annealing furnace room. A centrifugal pump in the cellar delivers the oil to the furnace under suitable pressure. The cellar is equipped with steam pipes to keep the oil at the proper consistency. The foreman's office, tool room and lavatory are housed in a brick addition 68 ft. 6 in. by 17 ft. 5 in. south of the annealing furnace room.

Simultaneous with the erection of the boiler shop, a central oxy-acetylene generating building was built just



Plan of the New Boiler and Tank Shop. Showing the Erecting Room at the Top and the Machine Room Below.

work. Tests of cubes made in the company's field testing laboratory at Laurel, Mont., showed high compressive values.

A feature of the shop is the use of large steel sash windows fitted throughout with wire glass. The large percentage of the wall area devoted to windows insures a maximum of natural lighting. To provide additional light in the machine bay there are eight skylights, each 26 ft. 3 in. by 8 ft. The building is heated from the shop boiler plant. The engine doors, which are 13 ft. 4 in. by 17 ft. 8 in. high, are of the double-folding type, sliding on an overhead track. They are easily controlled, which is of importance on account of the high winds prevalent in Livingston. The doors are fitted with eight window-sash with wire glass.

north of the shop and all of the existing shops and round-house as well as the new structure were equipped with oxygen and acetylene gas pipes for welding and cutting work. An ample number of outlets were also provided throughout the erecting shop and machine bay of the new boiler shop. The shop is well supplied with electric power outlets along the walls and posts to provide for portable tools. Air from the central power plant compressor is distributed by a well designed system of piping.

Boiler Testing Equipment

A special feature for taking care of hydrostatic tests on completed boilers is a separate water main system with outlets between each pair of tracks equipped with steam pipe connection so that the water is heated as it

passes into the boilers. This permits the hydrostatic test to be made with hot water approaching service conditions of a boiler. A special system of piping separate from the sewer system drains the waste testing water. The radiators are of the hot water design (although the heating is done by steam) and have vacuum returns which take the condensate to the power plant. The electric light wiring is in conduits throughout and ample illumination is provided which is supplemented by light sockets for portable lamps for work inside the boilers. The lavatory is well equipped with modern fixtures and a hot water tank is provided for wash water. The sinks, designed so that they can be used as bowls or washing can be done under running tempered water.

List of Tools and Equipment

The tools and equipment in the boiler shop are as follows:

One 15-ton Shaw 3-motor electric traveling crane of 49-ft. 8½-in. span and 23-ft. lift.

One 70-ton Shaw 6-motor electric traveling crane of 84-ft. 11-in. span, with two 35-ton trolleys, one of which is equipped with a 5-ton auxiliary hoist.

One 10-ft. by 12-ft. 3-in. by 24-in. Johnson Manufacturing Company's plate annealing furnace, oil fired, draft furnished by a Johnson No. 118 motor-driven blower.

One Williams & White No. 14 double punch and shears, motor driven.

One Acme 1½-in. bolt cutter.

One 72-in. Cincinnati-Bickford No. 6D-309 improved radial drill, driven by a 15-hp. motor.

One No. 4 Hilles & Jones horizontal punch, with 30-in. throat, driven by a 7½-hp. motor.

One Niles-Bement-Pond heavy-duty, multiple-spindle drilling machine (four spindles) driven by a 20-hp. motor.

One Marshalltown-Schaefer motor driven flue-welding machine, with three sizes of rolls, driven by a 3-hp. motor.

One flue cutter for superheater tubes.

One flue cutter for small tubes.

Two Johnson Manufacturing Company's No. 111 flue welding furnaces. Draft furnished by a Johnson No. 5 motor-driven steel pressure blower.

One Hilles & Jones No. 3 rotary bevel shear driven by a 15-hp. motor.

One Niles-Bement-Pond 12-ft. bending roll, driven by a 30-hp. motor.

One 48-in. by 6-in. grindstone.

One emery wheel.

One 10-ft. flanging clamp.

All motors are designed for 3-phase, 60-cycle, 220-volt current.

Work on the new shop commenced in April, 1924, and was completed in November. Charles Skooglund of St. Paul, Minn., was awarded the general contract. Ingolf Kielland, St. Paul, was the contractor for the sewer, water piping, heating and plumbing work. The Staple Roofing & Sheet Metal Works, St. Paul, was the contractor for the roofing. The electric wiring, tools and oxygen and acetylene pipes were installed by the mechanical department forces of the railway. The cost of the building was \$154,000 and the cost of the equipment, including cranes, was \$40,000. The work was executed under the direction of H. E. Stevens, chief engineer of the Northern Pacific.

THE LOUISVILLE DERBY at Churchill Downs, Louisville, Ky., on May 16, necessitated the operation of 30 special trains from Chicago, carrying approximately 4,000 people. The Pennsylvania ran 13 special and two regular trains; while the Chicago, Indianapolis & Louisville ran 12 special and two regular trains, one of which was the Pullman Cuban train which for some months was operated in Cuba and which was chartered by the Edgewater Beach Hotel, Chicago. Among the roads not having direct service from Chicago to Louisville, the Cleveland, Cincinnati, Chicago & St. Louis operated a special train. The Illinois Central also ran a special from Memphis to Louisville.

Master Boiler Makers Meet at Chicago

THE sixteenth annual meeting of the Master Boiler Makers' Association opened Tuesday morning, May 19, at the Hotel Sherman, Chicago, with about 600 members, guests and supply men in attendance. President Frank Gray, was in the chair at the opening session.

After the invocation, H. T. Bentley, general superintendent of motive power, of the Chicago & North Western, addressed the meeting. During his talk he suggested that the name of the Association might appropriately be changed to "Railway Master Boiler Makers," without altering the by-laws or limiting the membership to the railroad field. Practically all members of the body are railroad men and he felt the name should convey this thought.

His suggestions were of a practical nature and dealt with better maintenance, cleaner tubes, the prevention of front end air leaks, and steam leaks—all working for better fuel economy, performance and safety. He also touched on the all important apprenticeship problem. Some incentive must be given young men to enter the railroad trades including boiler making, he said. Foremen and all others should work with the boys and help them in every possible way. When an apprentice completes his course, he should be able to handle any and every phase of his trade with facility. He will only be able to do this if his supervisors have worked with him as they should.

The competition between motor truck, bus and railroads received comment. Mr. Bentley said that these vehicles performing the duties of common carriers should carry some of the burden of taxation, road maintenance and other items to which the railroads are subjected if they are to be allowed to compete with them. Without such an equalization of tax burden, the motor transport service receives what is in effect a public subsidy and cuts materially into railroad business.

Following Mr. Bentley's address, the president delivered his annual address. The remainder of this session was devoted to reports of the secretary and the treasurer and routine business. Letters were received from A. G. Pack, chief inspector of the Bureau of Locomotive Inspection, and A. R. Ayers, assistant general manager, New York, Chicago & St. Louis, expressing regret at their inability to be present at the convention. Addresses were scheduled for both these men, as well as one by W. J. Tollerton, general superintendent of motive power of the Chicago, Rock Island & Pacific.

The report of the Recommended Practice and Standards Committee on the subject of Proposed Boiler Welding Practice called forth much discussion. The following special topics were reported upon and thrown open to general discussion from the floor of the convention: Cracked Bridges and Cracks in Flange Knuckles; Training and Developing of Boiler Inspectors and Assistant Foremen; Pumping Station Boilers; Renewal of Staybolts Adjacent to Those Found Broken, and Boiler Pittng and Grooving.

The final session on Friday, May 22, was devoted mainly to the election of officers for the coming year, a report of which will appear in a later issue of the *Railway Age*.

J. A. SHAW, electrical engineer for the Canadian Pacific Railway in Montreal, was elected president of the Canadian Railway Club at the twenty-third annual meeting and smoker held in the Windsor Hotel in that city last week.

Employees and Management, Partners

Fourteen railroads are now helping their employees to become part owners of their companies

FIVE years ago there was not a single railway which made any attempt to encourage its employees to become part owners in their company through investment in its securities. Today there are 14, among them being some of the country's largest roads. Thus, the last half decade has seen something of a revolution in the relation of railway employees with their companies.

The increasing invasion of labor into what was once considered the exclusive province of capital is one of the most interesting and unquestionably beneficial developments of recent years. The entrance of labor organizations into the banking business has been a significant step. A new departure of even greater significance and benefit to the nation's economic welfare has been the increased participation of employees as individuals as owners of the industries by which they are employed. This development has been particularly strongly marked on our transportation systems. That so many of the railways have not only given their tacit approval of employee ownership of their securities, but have gone so far as to render definite encouragement and aid toward this end is a true indication of the desire of railway managements for the elimination of the "Capital vs. Labor" warfare, to the mutual benefit of the railways, their employees and their patrons.

The increase in the number of employee owners of railway securities, and more broadly of all kinds of owners of railway securities, in recent years is truly remarkable. In a recent survey made by Robert S. Binkerd, vice-chairman of the Committee on Public Relations of the eastern railroads, it was disclosed that in the seven-year period from January 1, 1918, to January 1, 1925, the number of employee stockholders in 26 Class 1 railroads increased 70,262, the total number of stockholders in that period increasing from 454,304 to 699,552. In this same period the number of customer stockholders increased 45,003.

The *Railway Age* has watched the growth of employee ownership of railway securities with interest. It has recently inquired among the railways to determine how many of them are encouraging employee ownership of securities and to what extent they are backing up their encouragement with tangible assistance. The information gained from that inquiry is now available.

In letters addressed to the presidents of 34 large railway systems it was asked whether their companies had adopted any plan especially to promote investments in securities by employees and patrons; the number of stockholders in their companies at the latest date for which the information was available; the number of employee stockholders on that date and the approximate amount of stock owned by employees.

Fourteen Roads Encourage Investment

Of the 34 roads, 14 have some sort of plan with which they give definite encouragement to the purchase of their securities by their employees, while 20 are without such plans. Of the 14 roads which have adopted some such plan, the presidents of two stated that they lent some aid in this direction and made the point that they do not "promote stock selling." This aversion to undue promotion of stock selling is general among all the roads. There has

apparently been but little attention directed to the proposition of railways selling securities to their customers. The Illinois Central is considering this but no definite plan has yet found approval. The New York, New Haven & Hartford recently has experimented with success in the sale of bonds to its customers as well as its employees. Few roads apparently are disposed at present to make special efforts to increase customer ownership.

Reasons for Not Adopting a Plan

Of the 20 roads which stated that they had no plan for the encouragement of employee ownership of their securities, only two expressed any disapproval of the theory of such a plan, while one mid-western road is apparently considering the adoption of something of the sort. In objection to the principle of employee ownership, one railway president stated his belief that there are "other means better than selling stock" of joining in closer co-operation with the employees.

The president of a southern road went more deeply into possible deterrents to the successful operation of employee ownership plans. The fluctuation in the value of the stock of a company, particularly of railways, he considered the principal stumbling block. "This is particularly true," he said, "since public service corporations are subject to so many vicissitudes particularly incident to the country's system of restrictive regulation, so that the field for co-operative effort such as employed on other lines of industry is necessarily rather limited." The management of his road has repeatedly considered the desirability of adopting some plan calculated to influence officers and employees to become stockholders, but has invariably been forced to an adverse decision owing to the grave possibility of engendering animosity and ill-feeling whenever conditions might result in a depreciation of the value of the stock. An employee ownership plan, he concluded, would operate to perfection under prosperous conditions but with the reverse it would likely prove more harmful than beneficial.

With the exceptions noted, the 20 roads concerned in our inquiry, which are without employee security ownership plans expressed no disapproval of such plans in principle, justifying the conclusion that in most instances the lack of such plans has been due to local conditions.

Characteristics of Plans

The actual operating characteristics of the plans used by 14 railways differ in proportion to the extent to which the managements have pushed the sale of stock and other securities to their employees. There has also been no general rule as to the class of securities made available to the employees for purchase. Two roads sell only bonds, five sell common or capital stock, two preferred stock, four common or preferred stock, and one any kind of security.

One of the 14 roads, the Delaware & Hudson, has no plan applicable to all its employees, but it lends itself to the plan inaugurated by the Delaware & Hudson Freight and Ticket Agents' Association early in 1924 by making deductions from the pay of agents and turning the deducted amounts over to the association to apply toward stock purchases. Up to January of this year 166 agents

had subscribed for a total of 420 shares of stock in the company.

The two roads which assist their employees in the purchase of their bonds are the New York, New Haven & Hartford and the Missouri-Kansas-Texas. Early this year the New Haven, in order to refund its European loan of 1907, issued \$23,000,000 of 15-year 6 per cent gold bonds, the sale of which was not only promoted among the general public but also the employees of the New Haven and its patrons. From its employees the New Haven has agreed to accept a 10 per cent cash payment and 10 per cent each month thereafter until the par value of the bonds is paid in full. Reports indicate that this plan has been signally successful.

The "employees' saving and bond ownership plan" of the Missouri-Kansas-Texas was adopted on July 1, 1924, and subscription books for bond purchases were open from August 1 to September 30. In that time 1,415 employees subscribed for a total of \$650,000 face value of bonds. The management was authorized to arrange for the acquisition in the open market of a block of its adjustment mortgage 5 per cent gold bonds, Series A, which were offered to the employees at \$56 a share. The bonds are paid for in semi-monthly installments of 50 cents for each \$100 face value bond allotted. After 50 per cent of the purchase price of \$56 has been paid, subscribers are permitted to anticipate the payment of subsequent installments. Interest at the rate of 6 per cent per annum is charged on all deferred installments and the employee subscribers are credited with interest coupons collected on the bonds during the period of deferred payment. The installments on the purchases are deducted on the semi-monthly payroll. The bonds are delivered to the purchasers upon completion of payment with all subsequently maturing interest coupons attached. An employee may cancel his purchase at any time under several optional arrangements. The face amount of bonds for which each employee might subscribe was limited to \$100 for each \$224 of his yearly earnings.

Several Roads Sell Common Stock

One of the roads which has offered its common stock to its employees, the Lehigh Valley, has the distinction also of being the first railway to inaugurate an employee stock ownership plan. This innovation was adopted on June 22, 1920. Since that time 2,105 employees have subscribed for 10,521 shares of the company's stock. Employees are permitted to purchase one, two, three, four, five, ten or twenty shares of common stock which is bought by the company in the open market at the market price on the day the subscription from the employee reaches the treasurer's office at Philadelphia or as soon afterward as possible. Deductions are made from the payroll for the second half of the month at the rate of \$5 for each share or, if desired, in larger amounts so long as they are multiples of \$5, that is, \$10, \$15, etc. The stock is held as the property of the company and remains such until the final installment is paid, dividends accruing to the company. However, the company regards each installment paid by an employee as an investment and he is credited with interest thereon at the dividend rate paid by the company on its common stock. After the delivery of the stock, dividend checks are mailed quarterly to the purchaser as to other stockholders.

The Union Pacific, which also sells common stock to its employees, is another pioneer in the plan, its operation dating from December 25, 1920. Like the Lehigh Valley, the Union Pacific purchases its stock in the open market upon the order of its employee subscribers. Employees pay off the amount of the cost of the stock in 24

monthly installments, each equal to 1/24 of the cost of the stock with interest at 6 per cent per annum on the deferred payments. The installments are deducted from the monthly payroll on the second half of each month. The number of shares any employee can purchase is limited to ten. In case no wages or an insufficient amount to meet the installment on his purchase is due an employee on the payroll, the employee must pay the installment or the balance in cash before the last day of the month for which the installment is due.

Dividends on the stock purchased by an employee are credited to him as against the interest on deferred payments charged to him. Such interest and dividends do not affect the monthly installments but upon payment of the last month's installment the controller sends to the employee a statement of the dividends credited and interest charged to him together with a check for any balance due him. The company also assumes and pays all federal and New York stamp taxes upon the transfer of the stock to the employee. Provision is made that in case the employee dies or becomes permanently disabled while in the service, the disabled employee or his estate will be entitled to complete the payment for the stock, or settlement will be made for the amount he has paid in. In case the employee leaves the service of the company, voluntarily or otherwise, settlement is made by delivery to him of a certificate registered in his name representing the number of shares, if any, the cost of which has been fully paid for by the aggregate amount of the employee's payments and the dividends credited to his account, less the interest charged to his account. Any amount remaining upon the computation less than the cost of a full share shall be paid by the company to the employee. Default in the payment of three successive installments operates at the option of the company to cancel and terminate the right of the employee to complete the purchase of the stock. In this event the company repays the employee the aggregate amount of his installment payments without interest.

The Southern Pacific, which co-operates with its employees in the purchase of its capital stock, limits the purchase by each employee to 15 shares. Like other roads, it also purchases the stock for its employees in the open market. The details of its plan are very similar to those of the Union Pacific except that the employees pay not less than \$5 a month for each share of stock purchased. The right to amend or to withdraw the plan at any time is reserved by the company but such amendment or withdrawal does not apply to the stock purchases made before that time by the employees. Since February, 1922, when the plan was placed in effect, 493 employees of the Pacific system of the Southern Pacific have subscribed for stock under the plan.

The plan of the New York Central, which also offers its capital stock, has a number of aspects different from those of the plans of other railways. On January 7 this year it offered to its employees and to the employees of its controlled companies, the opportunity to subscribe for shares of its stock at \$110 per share, this cost not being affected by any fluctuation in the market value of the stock. This price was then and is now considerably lower than the market value of the stock. Thirty-five thousand shares were offered, each officer or employee being entitled to subscribe for not more than one share of stock for each \$200 of his annual rate of compensation but no subscription was taken for more than 20 shares. Payment for the stock is made in installments by deductions in pay ranging from a minimum of \$5 a month to a maximum of \$15 per month for each share, interest at 4 per cent being charged on deferred payments and dividends on the stock being credited in part payment until the stock is fully paid for. It developed soon after the offer was made that the

35,000 shares of stock which had been set aside for the employees would not be sufficient so that the amount of stock available was increased to 68,747 shares. Within a month after the offer had first been made, 41,570 employees had entered their subscriptions for 96,900 shares of stock. This amount not being available it was necessary to reduce the subscription of each employee a proportionate amount.

Two Roads Offer Preferred Stock

The Chicago, Rock Island & Pacific and the Great Northern have offered their preferred stock for purchase by the employees. Up to November 30, 185 Rock Island employees had taken advantage of the plan. On the Rock Island, employees eligible to subscribe for the 7 per cent or 6 per cent preferred stock are limited to those of more than six months' continuous service with the company. Orders for the stock are addressed to the treasurer of the company at Chicago, each order being accompanied with an initial cash payment of \$5 per share of stock to be purchased. The stock is then purchased in the open market by the company, the purchaser being notified of the price paid, the brokerage charges and stamp taxes, which he must pay. A minimum deduction of \$3 per month for each share of stock purchased is made until the full amount has been paid. As on other roads, interest of 6 per cent per annum is assessed on the unpaid balance and dividends declared on the stock pending full payment are applied against the unpaid balance. The Rock Island plan provides that in the event of termination of employment or death of the employee, the unpaid balance due upon any contract for the purchase of stock under the plan shall at the option of the company be immediately due and payable. If not paid upon demand, the company may dispose of the stock at the prevailing market price and after paying the unpaid balance in full with interest thereon and the necessary brokerage charges, the remainder will be refunded to the purchaser or his estate. The employee purchasers are permitted to have payments suspended during absence from duty on account of disability or for other reasons the lapse not to exceed four months and the payments to be resumed upon return to service. If the employee purchaser is absent for longer than four months or if payment is not resumed upon his return to the service, the stock is disposed of as if the service of the employee had been permanently terminated. This also applies to employees desiring to withdraw from their contract. Pensioners of the company are also permitted to acquire stock in the same manner as active employees except that in their case the initial payment of \$5 a share is not required and 10 per cent of the purchase price is deducted from each pension check.

Due to its employee stock purchase plan, the Great Northern had on September 15, 1924, 1,377 employee stockholders who held 33,625 shares of stock. By the terms of its plan employees are limited to the purchase of one to 25 shares of the preferred stock of the company. The stock is purchased by the company in the open market and payments are made by the employees at the rate of not less than \$3 a month for each share of stock purchased. An initial cash payment of \$5 a share of stock to be purchased is also required. In other respects the Great Northern plan is similar to that followed in general by other roads.

The Atchison, Topeka & Santa Fe which offers both common and preferred stock to its employees inaugurated its stock purchase plan in the spring of 1923. Since that time 204 employees have purchased 824 shares of preferred stock and 228 employees have purchased 879 shares of common stock. The stock is purchased by the company for the employees at the current market price, this being

paid off in installments of \$10 a month for each share purchased. Provision is also made that any employee desiring to purchase stock outright may do so by accompanying his order with \$10 in cash and paying the balance, including brokerage charge, after the purchase has been made in the market. Subscriptions for as many as 10 shares are permitted.

The Reading also offers its employees both preferred and common stock. As on other roads the stock is purchased in the open market by the company, and an initial cash payment of \$3 a share on the preferred stock and \$5 a share on common stock is required. The brokerage and other charges are paid by the employees but the Reading Company, as is the case with all other railroads, makes no charge for its services in the purchase of the shares. Minimum payments of \$2 per share on the preferred stock and \$3 per share on common stock are required, interest at 5 per cent per annum being charged on unpaid balance. Other details of the Reading plan are similar to those in general use. On December 31, 1924, approximately 600 employees had availed themselves of the investment privilege during the year 1924 and acquired in the neighborhood of 5,000 shares.

A similar plan is in effect on the Illinois Central, whereby employees purchase Illinois Central stock at the market price and pay for it in monthly installments. On December 31, 1924, 859 employees owned 7,414 shares of common stock and 149 employees owned 699 shares of preferred stock.

Pennsylvania Has Unique Plan

Employees of the Pennsylvania may purchase the stock as well as the bonds of the company, not through the company itself, but through either of two agencies, the Pennsylvania Railroad Employees' Provident and Loan Association or the Mutual Beneficial Association of Pennsylvania Railroad Employees, Inc., each of which has the endorsement of the company. Securities, either stock or bonds, bought through the Provident and Loan Association are purchased in the open market and paid for by monthly installments of not less than \$2.50 per share of stock or 5 per cent of the cost of any other security. Interest on unpaid balances is at the rate of 6 per cent per annum. The payments are either deducted from the salary vouchers of the purchaser or are made in cash to the association through any station agency or any other authorized depository of the Provident Association. A similar plan is offered by the Mutual Beneficial Association of Pennsylvania Employees with the exception that only stock may be purchased and an initial payment of \$5 per share on stock must accompany each order. The plan of the employees' Provident and Loan Association has been in effect only since June, 1923. Prior to that time the employees were able to purchase Pennsylvania stock through the Mutual Beneficial Association which plan was placed in effect on February 1, 1921.

Under both plans, 16,252 employees had subscribed for 69,470 shares of stock and bonds up to January 15 of this year.

Mo. P. 3-Cylinder Locomotive

IN the description of the three-cylinder locomotive No. 1699, built for the Missouri Pacific by the American Locomotive Company, published in the May 9, 1925, issue of the *Railway Age* the statement was made that this locomotive was equipped with a Walschaert valve gear. This is incorrect. The locomotive is equipped with the Baker valve gear.

Economics of Shopping Locomotives*

A discussion of some factors which must be considered in developing an effective and economical shopping program

By L. K. Sillcox

General Superintendent of Motive Power, Chicago, Milwaukee & St. Paul

THREE are many elements in the matter of executive policy which go to make a relatively high or low maintenance cost of locomotives, and the method of shopping power is one of the most important. Two extremes of practice are found, with many variations between them. One is what may be termed the high-frequency-shopping and the other the low-frequency-shopping policy. The former is that based on running

the placement of forces as between roundhouses and back shops, the rapidity with which mileage is run out and particularly the roundhouse and back shop facilities for handling certain classes of work. Furthermore, where a railroad has back shops of an obsolete character, it is practically as well off doing its work in roundhouses and it may be found helpful, under such conditions, to construct small modern back shop facilities at critical points to care for division requirements without increase in overhead expense.

St. Paul Changes from High to Low Frequency Shopping Plan

The results obtaining under the two extremes of policy mentioned have been observed for a considerable period and it appears that the policy is largely governed by local conditions rather than local conditions being governed by the policy. The Chicago, Milwaukee & St. Paul has had experience under both plans. Prior to 1921 a high frequency of back shop repairs was employed but after considerable study the plan was changed to a low frequency of repairs. The trend of unit costs, etc., both prior and subsequent to 1921, is illustrated in Fig. 1. This is a graphic illustration of the results obtained under these two extremes of policy, affected, of course, by the price trend of labor and material in the meantime. The lines plotted represent three general groups, one indicating the growth and size of units maintained, another representing the various unit costs of maintenance and a third representing the frequency of back shop repairs. The growth of property maintained is represented by the dotted line A, indicating the total tractive force pounds owned from 1910 by years to the end of 1924. This growth was not all in the nature of new equipment, but represents power added by the acquisition of subsidiary and leased lines, as well as some new equipment, and to that extent the growth line should not be confused with the rate at which new equipment might have eliminated obsolescence. This very fact has a marked bearing on the cost of maintenance as the total growth consisted of approximately as many of the smaller and older locomotives as the acquisition of the larger and newer types. As to whether or not this extension of property was consistent with the growth of business naturally depends upon how the acquired lines may have increased the amount of business in relation to the amount of property. It is not desired to elaborate here upon the principles of the proper rate of growth of property, but merely to state that the method of computing the proper growth would be to determine the gross revenues per locomotive owned, affected somewhat by the characteristics of the lines added, as to their ability to function on a high or low unit train tonnage basis. Nevertheless, the growth of property represents a serious problem in the matter of having back shop development keep pace therewith and of getting continuous use from power.

Fig. 1 also shows (by heavy dot-and-dash line C) the

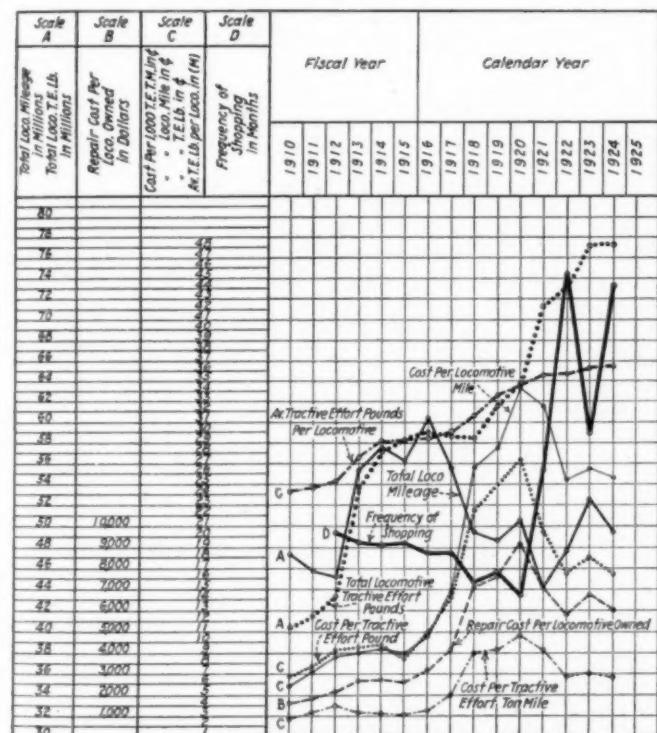


Fig. 1—Graphical Illustration Showing Results of Changing from a High to a Low Frequency Shopping Program on the C. M. & St. P.

locomotives through shops with an anticipated service of from 12 to 14 months with a minimum of roundhouse attention. The latter is that based on running locomotives through shops with the idea of having a service of 24 months or more and with a greater degree of roundhouse attention to attain this length of service.

Vital elements in determining such a policy are the relation of the number and size of locomotives owned to the business handled, the road conditions for hauling heavy or light tonnage trains, the topography of the country traversed, the distribution of industrial centers, the presence of large terminals, the spacing and capacity of roundhouses, the distribution and assignment of power,

*Abstract of a paper presented at the spring meeting of the American Society of Mechanical Engineers, held at Milwaukee, Wis., May 18-21.

increase in the average size of locomotive expressed by the mean tractive force pounds per locomotive owned. The size of locomotives is an element in the unit cost of maintenance and it will be noted that this figure increased from approximately 24,000 tractive force pounds per unit to 36,000 pounds in 1924, or approximately 50 per cent. The chart is confined to steam locomotives only, electric locomotives being a separate and distinct problem. It is not possible to state whether the growth in locomotive ownership increased more or less than the revenues or the average train load as this data is not available from the subsidiary and leased lines.

The feature in Fig. 1 deserving of closest study is the line *D*, representing the frequency of back shop repairs. This is arrived at by dividing the total yearly classified repair output into the total owned throughout the year, which expresses the number of years between shoppings thus developed. This, of course, varies from year to year according to the difference in the number of locomotives owned or used and the output. This is based on a classification of repairs instituted during federal control and is translated back to 1912. This classification runs as follows:

Class 1—New boiler or new back end. Flues new or reset. Tires turned or new. General repairs to machinery and tender.

Class 2—New firebox, or one or more shell courses, or roof sheet. Flues new or reset. Tires turned or new. General repairs to machinery and tender.

Class 3—Flues all new or reset. (Superheater flues may be excepted). Necessary repairs to firebox and boiler. Tires turned or new. General repairs to machinery and tender.

Class 4—Flues part or full set. Light repairs to boiler or firebox. Tires turned or new. Necessary repairs to machinery and tender.

Class 5—Tires turned or new. Necessary repairs to boiler, machinery and tender including one or more pairs of driving wheel bearings refitted.

General repairs to machinery will include driving wheels removed, tires turned or changed, journals turned if necessary, all driving boxes and rods overhauled and bearings refitted, and other repairs necessary for a full term of service. Running repairs are unclassified.

Suffix *A* to any class of repairs will indicate that the repairs are required on account of accident; *B* will show the initial application of stoker; *C* will indicate the initial application of superheater; *D* will indicate the initial application of outside valve gear; *E* will indicate locomotive was converted from compound to simple or from one type to another. Mallet locomotives will be indicated by a star following application.

Locomotives receiving Class 1, 2 or 3 repairs must be put in condition to perform a full term of service in the district and class of service in which they are to be used, Class 4 repairs not less than one-half term, and Class 5 repairs not less than one-quarter term.

It may be generally conceded that the above is not sufficiently specific to be a complete measure of output, since the divisions are not based on work units to a great enough degree to permit of the judging of shop output in detail.

The variation in the trend of line *D* is entirely dependent upon the allotment of labor and materials available for maintaining equipment. The shopping frequency increased gradually from 1912 to 1920, and during the latter year locomotives were going through at the rate of once every 14.28 months. In 1921 a committee was appointed to report upon the economics of shopping power, as a result of which it will be noted there was a radical change in the frequency of back shop classes of repairs subsequent thereto. This study related particularly to the situation existing on the Chicago, Milwaukee & St. Paul and is not offered as a criterion, for the reason that other conditions often determine whether or not such a policy is applicable to any but a specific case. The frequency of shopping trend, expressed both in years and in months between shoppings, was as follows:

Year	Years between shopping	Months between shopping
1920	1.19	14.28
1921	2.20	26.40
1922	3.30	39.60
1923	2.50	30.00
1924	3.70	44.40

Adjustment Made Between Back

Shop and Roundhouse Facilities

The change in plan necessarily brought about some modification in the distribution of machine tools and facilities in back shops and roundhouses. Great care had to be employed to avoid deferred maintenance under such a transition, because of the great cost incident to overcoming deferred maintenance promptly and adequately, were this condition to have obtained. The roundhouses were partially equipped to do the necessary machinery and running repair work and in some cases rather heavy boiler work, so as to properly maintain the power for longer periods, some of the facilities being transferred from the back shops to the roundhouses. The back shop forces were reduced in proportion. As to the results obtained from this change of plan it should be understood that there were some wage and material price variations since 1920, but these adjustments account for approximately 14 per cent of the reductions attained. The cost trends on the chart merely indicate the actual reductions with no separation between fluctuations in the cost of material and labor, shop efficiency, etc.

The cost per locomotive mile (line *C*) during the high wage period of 1920 had reached 34 cents, when the shopping frequency was 14.28 months, and since the frequency of back shopping was reduced the cost has steadily declined and in 1924 was less than 26 cents. This represents a reduction of approximately 24 per cent. The cost per tractive force pound was reduced from 27 cents in 1920 to 16.5 cents in 1924 or 39 per cent. The cost of repairs per locomotive owned was \$9,300 in 1920 and \$6,000 in 1924, or a reduction of 35 per cent. The cost per thousand tractive force ton miles was reduced from 1.075 cents in 1920 to 0.676 cents in 1924 or 37 per cent. In the meantime, the average size of locomotives increased 6 per cent.

This principle of shopping locomotives is in no sense special or peculiar. As to whether or not a policy as outlined could be taken as a criterion, it would be difficult to state. The plan was adopted for the Chicago, Milwaukee & St. Paul because it appeared to be properly applicable. It is a matter of interest, however, to make a study of ten carriers, where there is a wide range of policy, using the same units outlined above. The value of the units used cannot be considered as entirely intrinsic and for that reason the method employed should not be considered as absolute. Fig. 2 is offered as a result of a study of various carriers, some having a high frequency and some a low frequency method. In plotting the data, scales were used merely to throw relative items together in order to indicate those which run in a certain ratio and those which run inversely. The horizontal scale is the average tractive force pounds per locomotive owned to show the size maintained. The data is based on 12 months in 1924.

Another point may be observed in the matter of performance. The average miles per locomotive run per year is shown in line *A* and this indicates a difference in performance which does not follow relatively the variation in size of power, indicating many degrees in intensity of use, etc. The mileage ranges from 20,800 to 28,476 per locomotive per year. The carrier with the largest size of power made practically the same mileage per locomotive as the one with the smallest size of power shown on the chart, whereas those administrations with locomotives of a size ranging between the two extremes made less mile-

age per locomotive. This may be considered an element of performance and demand characteristics of the lines involved. In this case the highest mileage was 37 per cent greater than the lowest shown.

Unit Repair Cost Not Proportional to Locomotive Size

The cost per locomotive mile as shown by line B is low for the carrier having the smallest size of power, being less than 17.5 cents and is high for the one having the larger size of power, the upper range being a little less than 30 cents per locomotive mile. The average size of power expressed in tractive force pounds was 47 per cent greater in the largest average size as compared with the smallest average size, whereas, the cost per mile was 71 per cent greater for the larger than the smaller power so that it may be said that in this case the cost increased one and one-half times as the unit size of power increased. This figure is not in itself entirely significant.

The cost of repairs per tractive force pound, being a measure of size only, does not run in direct ratio with the increase in size. It will be noted that while the smallest

because it is evidence, for the most part, of intensive use and a more or less uniform power demand. Thus far the frequency has been stated in terms of time only. It is affected very largely by the rapidity with which mileage is run out and, therefore, in a general way, reflects whether carriers are long or short in their power ownership.

This data indicates that as the average tractive force pounds owned increases, the cost of repairs per mile increases in a rather definite way; that the average miles per locomotive run and the average cost of repairs per tractive force pound have the same range characteristics; and that the average cost of repairs per thousand tractive force ton miles varies somewhat inversely with the average tractive force pounds per unit owned, with intermediate fluctuations.

Statistics are now available to show the gross ton-miles per freight train hour, which is a fair measure of locomotive performance when considering the average size, as well as the number of units employed. This reflects efficiency in train handling as well as corresponding utilization of power and where there is prompt turning in roundhouse care and running repairs fewer locomotives may be used for a given traffic and thus build up a reserve and maintain a proper shopping period. It is necessary, of course, to apply such data to road engines only and this can be done with the information at hand. The variation among carriers in such performance is quite extreme, some having as high as 26,000 and others as low as 12,000 gross ton-miles per train hour. This difference is far greater than the average size of power and other influencing factors, such as grades, curvatures, signal stops, etc. This leaves open to study the question of greater development along the line of utilization of power and consequent shopping methods.

Minimum Repair Cost Dependent on Proper Balance Between Classified and Running Repairs

Just what effect the specific policy followed has upon the trend of the cost of repairs is not thoroughly ascertainable, but it would seem that a minimum cost may be expected when it has been definitely established that a proper balance between classified and running repairs has been arrived at. No specific formula for reaching this division has yet been developed. A study of the cost of repairs per mile divided between running and classified work does not present a solution, because whenever it is necessary to decrease or increase forces and expenses, the fluctuation is felt directly in the back shop and only indirectly in the roundhouse. There is no argument against the great need of having uniform forces and avoiding the closing of shops, because excessive fluctuations in forces cause repair programs and the continuity of work to be disrupted, besides destroying discipline. Shop output is, generally speaking, directly affected by fluctuations and expenses and this seriously affects the frequency of classified repairs.

The factors used on the St. Paul in the general plan of shopping are assigned mileage, time, and actual physical condition based on customary and frequent inspections. Where there is a low rate of run-out mileage, time enters into the calculation to a greater degree than where mileage is run out rapidly. Physical condition is a vital element to overcome the differences in divisional characteristics or variations in the service rendered according to track, water and other features. In addition, it can be arranged to set a limit of expenditures for the various types of power according to the class of repairs to be given, any over-expenditure to be reported and explained, so that extraordinary repairs may be a matter of record.

The regulation of frequency of repairs to locomotive parts is a matter of long range study and the cycle of

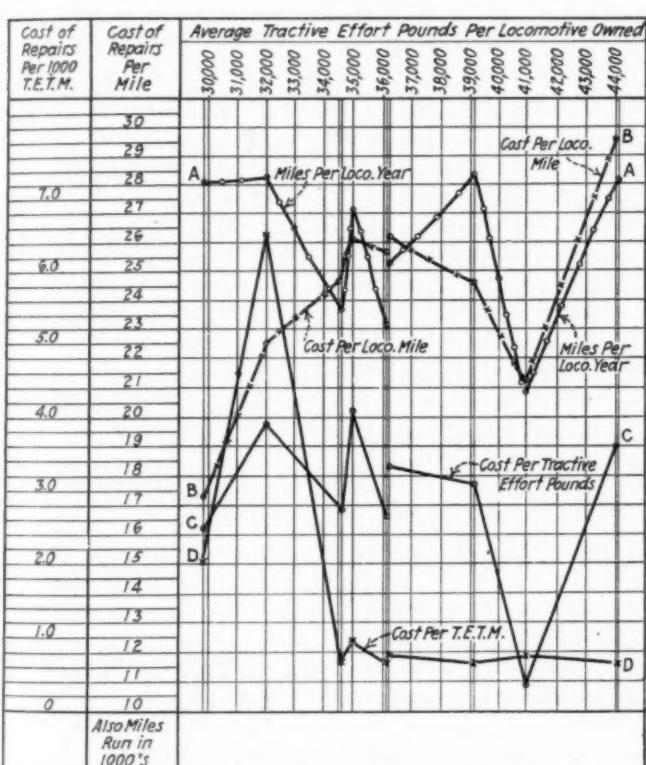


Fig. 2—Comparison of Cost of Maintaining Steam Locomotives Considering Average Size, Average Miles, Cost of Repairs per Mile per Tractive Effort Pound, and per 1,000 Tractive Effort Ton-Miles

size of power has the lowest cost of repairs, the largest size of power does not have the highest cost of repairs, both being exceeded by carriers having locomotives of intermediate capacities. The composite factor of cost of repairs per thousand tractive force ton-miles, consisting of the size and mileage run, followed somewhat inversely with the capacity of power owned, with variations in the intermediate sizes. Here it is interesting to note that the smaller size of power cost more than the larger power, the result being due, in this case, to the carrier with the larger power running about the same mileage per unit as the carrier with smaller power.

However, in general, it has been found that carriers using large size power have a fairly high frequency of back shopping, which is of great interest in this study

repairs cannot be followed specifically in all cases, although it has been our general policy to endeavor to follow a Class 3 repair with a Class 4 or 5 and then with another Class 4 or 5 and then a Class 3; in other words, having two minor repairs between two major repairs, but this depends upon the nature of service performed and the severity as well as the rapidity with which mileage is run out. It cannot at the outset be presumed that we can obtain approximately 50 per cent of the mileage between classified repairs for the first Class 3 repairs and then 25 per cent for each of the minor repairs, as experience has developed that inasmuch as taking up lateral, tire turnings or change, etc., constitutes a classified repair. Tire and lateral wear develop and become due for renewal just as soon after a Class 3 as after a Class 4 or 5 repair, so that it is well to contemplate a distribution of the mileage and make it equal for each class of repairs, whether a Class 3, 4 or 5, but regulate the cost of each shopping accordingly.

A study of shop and roundhouse facilities cannot be summarized in terms of specific units so as to outline the direct effect upon policy and the results thereof. It involves the number of roundhouses per mile of track, the frequency of turning locomotives or the miles run between turnings, etc. As a matter of interest, during the time the St. Paul was undergoing the change in policy referred to, studies of enginehouse operation were also made, not only as to repairs made, but as to the cost of turning power, frequency of turning, etc., with results shown in the table.

TRANSPORTATION EXPENSE (NOT MAINTENANCE)			
	1922	1923	1924
Average turnings per month.....	53,572	59,784	54,911
Average cost per month.....	\$430,492	\$384,969	\$331,830
Average cost per engine turned.....	8.30	6.44	6.04
Average cost per engine mile. (cents)	10.25	8.35	7.68
Average miles run between turnings.	78	77	78

No comparison can be made with other carriers in this respect, because it is found that the methods of counting engines turned, the accuracy of distributing charges, the nature of roundhouse facilities, etc., vary too greatly. The above is merely shown to indicate that the trend in other expenses affected by locomotives was downward the same as indicated in Fig. 1. It is very apparent that the frequency of turning power decreases with the increase in average distance between roundhouses, and that the average miles per engine turned will increase with the spread in distance between roundhouses.

Influence of Machinery and the Human Factor

The utilization of power requires careful and detailed study because any variation must, of necessity, have a marked bearing upon shopping policy. In cases where the per cent of power in service is low compared with the total owned it is usually found that the hours of service per day are low, or approximately six, then it is possible to have a large waiting list and to turn locomotives less rapidly through the shops and still have ample protection for service. A campaign along the lines of reducing the number of units in active service to a minimum consistent with traffic handled, based on the average miles per locomotive dispatched or the average miles between locomotive turnings (enginehouse operation) will necessarily avoid the purchase of new equipment for the purpose of increasing the complement because when longer runs are installed and fewer locomotives are used for a given service this naturally builds up a surplus. Intensive service requires a revision of the method of repairs and in some cases calls for a higher standard of repairs than where more locomotives are used in the same service. The objective should be to get more locomotive miles per month out of fewer active locomotives and to get more

hours of service per day out of each locomotive, then other factors will naturally increase the gross ton miles per train hour.

Where orders are issued to shops for locomotives of a certain character to be made ready for service on short notice, the time factor, as regulating the date of delivery, is often a matter of supreme importance. A study of this question soon brings to light an intricate problem with which supervisors and others in authority have to grapple. One of the outstanding factors is that of the machine tool and material handling equipment, with which is identified the means of producing work rapidly and to the best advantage. Many of the latest machine tools, cranes, tractors, etc., are conspicuous for the facility with which they can be operated, the controls being conveniently placed, thus saving time in setting up and subsequently handling the machine.

Another equally vital point is that of the organization of the work, which must, if time is to be saved, be planned on a definite and progressive system. All these measures are applicable to old as well as the most modern shops. However, they are likely to lose much of their value unless the workmen themselves co-operate in the avoidance of time wastage. It has frequently proved to be the case that, regardless of all of the devices and methods employed to increase the efficiency of power, the personnel and organization employed may be considered the most important. There is a great difference of opinion as to whether or not a locomotive is due for shopping. Judgment in this respect varies, but the basis depends largely upon training and the policy adopted, whether expressed or implied. The psychology of a high or low frequency shopping program varies. The human factor in the policy adopted is as vital as the material factor.

Nickel Plate Unification Hearing

WASHINGTON, D. C.

THE hearing before Commissioner Meyer of the Interstate Commerce Commission and Director Mahaffie of the commission's Bureau of Finance, on the Nickel Plate unification proposal, was adjourned on May 15 until May 25, after three additional witnesses had been heard. It is expected that when the hearing is resumed O. P. Van Sweringen, chairman of the board of the New York, Chicago & St. Louis, will take the stand to reply to the criticisms of the plan that have been voiced by counsel for the minority stockholders of the Chesapeake & Ohio and Hocking Valley, in cross-examination and in their petitions of intervention and for dismissal of the application, as well as to give information that Commissioner Meyer said that the commission would want as to the basis for the exchange of securities of the new company for those of the companies whose property is proposed to be leased to the new Nickel Plate. H. W. Anderson, representing C. & O. minority stockholders, stated that he would insist on a witness being called who could testify authoritatively on such matters and at the close of the hearing W. A. Colston, general counsel of the Nickel Plate, indicated that one of the Van Sweringen brothers would testify after the hearing is resumed. He also said he hoped to conclude the presentation of the case for the applicants in about a week.

On May 15 Mr. Colston filed for the record a statement indicating that most of the stock held by members of the protesting committee headed by George Cole Scott of Richmond had been acquired by them long after the announcement of the Van Sweringen proposal, which they now assert is unfair to the Chesapeake & Ohio stock-

holders, and much of it only a few days before the formation of the protective committee. The evidence consisted of certified copies of stock transfers which showed that only two members of the committee were recorded as stockholders at the time they advertised for deposits of stock and that those who had held stock subsequently added to their holdings. Mr. Colston has asked for the names of the 2,500 stockholders said to be represented by the committee and the dates when their stock was acquired.

Following protracted cross-examination of John E. Oldham, the Boston banker, who had testified on behalf of the applicants, H. A. Osgood, vice-president of the Fulton Iron Works, St. Louis, testified as to the advantages of the unification plan from the standpoint of the shipper, because of the new routes that would be opened and the better service that should result from having routes under control of one management that are now composed of several separate lines. J. A. Morris, district manager of the Car Service Division of the American Railway Association, described the congested condition of the Cincinnati terminals and said that some of the difficulties could be remedied by the diversion of some of the Chesapeake & Ohio traffic to Columbus that now goes to Cincinnati. W. J. McGarry, manager of the open-top car section of the Car Service Division, also testified, on subpoena from the commission at the request of Mr. Colston, regarding the improvement in operating efficiency in the Chesapeake & Ohio since April, 1923. He was asked on cross-examination to file similar data for other roads involved in the proposed unification.

First Electric Locomotive Completed for the Virginian

THE first electric locomotive for the Virginian Railway has been completed and on May 14 a number of preliminary tests were made on the test track of the Westinghouse Electric & Manufacturing Company at East Pittsburgh, Pa. Inasmuch as this locomotive is by far the most powerful ever built, the occasion was one

The most spectacular test to show the slowing down effect of regeneration was made by coupling a Mikado type locomotive of approximately 2,000 hp. to the electric locomotive and pushing the latter with one of the pantographs raised, thus allowing the motors from one of the units to feed power back into the line. The labored exhaust of the steam locomotive and the greatly retarded speed of the train, plainly indicated the powerful braking action of regeneration. The braking action can be very much increased by simply raising the two additional pantographs.

The Virginian electric locomotives are comprised of three units each. It is possible to separate these units to operate them individually if desired. It is also possible to add one additional unit to the three making a locomotive of four units in length with an output of more than 8,000 hp. The three units which are ordinarily semi-permanently connected are controlled from a single cab.

In operation on the Virginian one of these locomotives will be at the head end and one will act as a pusher on trains of 6,000 tons from Elmore to Clarks Gap. At Clarks Gap the trains will be filled out to 9,000 tons and a single locomotive will take the train down to Roanoke.

The successful operation of the Norfolk & Western locomotives has been a guiding factor in the design and construction of the Virginian locomotive, the principal difference between the two being that the latter are constructed for heavier service.

SEVENTEEN OFFICERS of the Canadian National receive salaries or remuneration amounting to \$15,000 a year or over, it was stated in the Canadian Parliament last week in answer to questions by Sir Henry Drayton. In giving the information the Minister of Railways said he did not think it quite fair to ask the Canadian National to give out information which no other railway would ever produce. He did not think there was any harm in answering this question but he said he hoped it would not be taken as opening the doors to all sorts of questions about Canadian National employees and their salaries which would give the competing road an unfair advantage and cause endless jealousy among the employees affected. The total amount paid out in salaries of this magnitude in 1924 was \$350,083. In answer to other questions



The First Virginian Electric Locomotive

of great interest and a large delegation of prominent railway officers from the Pennsylvania, Baltimore & Ohio, Pittsburgh & Lake Erie as well as from the Virginian Railway were present to witness the test and inspect this new electric giant.

asked in Parliament last week it was stated that equipment on the Canadian National Railways was at the end of 1924 valued at \$346,896,425. Purchases of equipment during each year were as follows: 1922, \$28,737; 1923, \$29,959,452; 1924, \$14,487,162, including sales tax.

Suggestions for Rate Readjustment

I. C. C. receives statements from shippers and carriers regarding meaning of Hoch-Smith resolution

AFLOOD of briefs and statements of suggestions as to the action which ought to be taken by the Interstate Commerce Commission and the procedure it ought to follow in complying with the Hoch-Smith rate revision resolution poured in upon the commission on May 15 and the two or three days preceding and following that date. Replies to them will be received by the commission up to June 15, after which it is expected to announce more definitely than it has the future course of its general rate structure investigation, Docket No. 17,000. This will probably include a series of hearings.

While most of the statements are from shippers or their representatives who contend that their rates are among those which Congress intended should be reduced, ranging from agricultural products to candy, there are also several from industries who fear that their products may be suggested as among those which should bear offsetting advances in rates and who have therefore filed statements of reasons why they should not be thus selected. Thus far no suggestions have been made as to the commodities on which rates should be advanced to make up for the proposed reductions on others, although some of the railroad statements urge the necessity for increases in rates rather than reductions, and all of the railroad statements point out that the requirement of the resolution relating to the maintenance of an adequate transportation system precludes reductions on particular classes of traffic not offset by advances on others. A good many of the statements filed on behalf of shippers express doubt as to the wisdom of the resolution.

The statement filed by the western roads was reported in the *Railway Age* of April 25, page 1023. Statements have since been filed on behalf of the Trunk Line and Central Freight Association roads, the Southern line, the New England lines and by some individual roads.

Brief of Southern Roads

The Southern carriers, in a brief of 61 pages, said that "it is preferable, so far as Southern territory is concerned, to meet the requirements of the resolution through the medium of the comprehensive investigations which the commission has heretofore held or which are now in progress in separate proceedings involving rates within and to or from that territory, as well as in formal complaints concerning such adjustments now pending before the commission."

The brief said the investigation must be on broad general lines, that the inquiry is confined to relationships, and that the commission's action is limited by the requirements as to maintenance of an adequate transportation system and that all existing laws relative to rate-making must still be observed. After a discussion of the effect of rates on agriculture the carriers contended that reductions on basic commodities, with compensating increases on manufactures and miscellaneous freight, are wholly impracticable, and that there is no intimation in the resolution that there should be a reduction of rates or revenues in the aggregate. It was confidently asserted that "no summary action or investigation is necessary, so far as Southern industries are concerned, to promote the free movement of commodities produced in the South."

"Far more constructive work can be accomplished to-

ward the establishment of permanent rate adjustments by disposing of the pending complaints and investigations and considering the subsequent commodity adjustments in the course of preparation through the regular channels and in the usual way, than by attempting a series of hearings in Southern territory concerning rate adjustments already settled or in process of investigation and consideration by the commission.

"It is suggested that the commission should at least hold in abeyance any general hearings throughout the South under No. 17,000 until it shall have completed its consideration of the rates embraced in pending proceedings and investigations not yet decided. When these investigations shall have been completed the commission will then have before it in connection with these cases and others hereinbefore mentioned that have already been decided a very complete survey of the rate structure in the South, will have fixed or reviewed the rates on many important classes of traffic, and in that connection will have had occasion to determine whether such traffic moves freely. After considering the proceedings above mentioned and in the light of this requirement as to freedom of movement, the commission will then be in a position to determine whether further hearings are necessary for the purpose of complying with any other requirement of the resolution.

"We refer elsewhere to the mandate of the resolution that, whatever action may be taken thereunder, an adequate system of transportation must be maintained. Without adequate transportation commodities cannot move freely or at all. No greater misfortune could befall the South than the adoption of any policy that would prevent the maintenance of adequate transportation, or deny to the Southern carriers the stability of credit necessary to procure facilities and provide service adequate in all respects to the South's growing needs and expanding commerce."

In conclusion the brief said it is the fear of many thoughtful, conservative men who have been considering this subject in the last few months that this investigation may have a seriously depressing effect upon the business interests of the country; and that this is not unnatural when the relation of freight rates to business is considered. "The present rate structure represents the best thought of students of transportation for more than fifty years. Built up, sometimes by litigation, sometimes by compromise, but more frequently by conference and agreement, its adjustments seem reasonably to meet the needs of commerce; and it is the basis upon which the business of this country is conducted. It is taken into account by all parties to all business transactions which involve the element of transportation. If the opinion now becomes prevalent that this rate structure is to be upset to any material extent, so that industrial and commercial enterprises will be uncertain as to freight rates, the obvious effect will be to disturb, and therefore to injure, business. We confidently believe that the commission will do everything practicable, within the limits of its duty under the resolution, to allay this widespread apprehension."

Eastern Roads

Counsel for the Trunk Line and Central Freight Association carriers filed a general statement of their views

stating that nothing in the resolution can be properly construed as intended to require the commission in establishing rates to ignore or disregard the two main considerations or elements of cost of service to the carrier and value of service to the shipper. "Manifestly," they said, "what the framers of the resolution contemplated was an investigation by the commission into the rate structures of the carriers in the light of commercial conditions and a readjustment of the same if the commission should be satisfied that this had become necessary in order to assure a free movement of commodities to markets economically tributary to the respective localities of production; but it is also quite as manifest that there was no intention that, in order to accomplish this, the commission should scrap the results of years of study or ignore elements in ratemaking which if disregarded would tend to impair the establishment and maintenance of an adequate transportation service for all shippers.

"Evidently the framers considered that in its administration of the duties devolved upon it in respect to ratemaking, the commission was leaning towards a view which failed to give due effect to the commercial element in ratemaking, with the result that an equitable distribution of the transportation charge among all classes of traffic was being unduly subordinated to other considerations. If this be the true interpretation of the resolution, its framers were but seeking to emphasize the importance of a rule of rate-making which was advocated by this commission in the first report issued by it.

"If, as we believe, the resolution was designed to do no more than to induce such a readjustment, if any, of the existing rate structures as should be found by the commission to be necessary in order to bring them in accord with the rule of rate-making laid down by the commission itself as the one best adapted to meet the transportation needs of the country, the commission in the performance of the duties devolved upon it by the resolution is not called upon to establish rates which shall conform to new standards, but is only required to bring about such lawful readjustments as will establish rate structures which, while designed to develop and sustain an adequate transportation system, will so apportion the transportation charge or burden as to promote the free movements within reasonable limits of all classes of traffic, especially such products of agriculture as may still be affected by the depression declared in the resolution."

"It would seem an unwarranted conclusion," they also said, "that there is need of any revolutionary readjustment of freight rate as among commodities or as among the parts of the country."

The statement adds that the roads will of course be prepared when and as concrete situations develop in the progress of the investigation to submit to the commission, if desired, the views of the carriers with reference thereto.

New England Lines

The New England lines filed a statement concurring in what was said in the statement filed by the western carriers, to the effect that both the intent of Congress and the construction of the resolution must be ascertained in the light of conditions of the country, including all of the conditions surrounding and affecting the transportation systems, as they existed at the time of passage of the resolution.

The New England carriers said that while the resolution without doubt owed its origin to agitation for reduced rates on agricultural products and "basic commodities," and might, naturally enough carry with it more or less "mirage" of fulfilling the hope that gave it rise, it must be interpreted independently. They said the resolution could not reasonably be interpreted as a mandate either to re-

duce or to increase rates—that it was a mandate to investigate the rate structure to consider whether, as a whole, it was so constructed as to comply with the interstate commerce act, particularly sections 1, 3, 15 and 15a. They said the obvious intent was that any action taken by the commission was to be in accordance with all of the provisions of the act.

The declaration of Congress in the resolution had another aspect, the statement said, adding that it could not be gainsaid that among "our several industries" was the transportation industry, and that the commission must consider the conditions that might at any time prevail in that industry to the end that commodities might freely move.

"Unless that industry is prosperous," the statement continued, "is operating with efficiency and economy, and earning the fair return which will enable it to provide for adequate maintenance, additions and betterments, and new equipment, commodities cannot freely move—there will be congestion, delay, and car shortages which will prevent freedom of movement."

Figures were submitted showing that products of agriculture and animals made up approximately 16 per cent of the New England traffic, approximately 14 per cent of the traffic of all carriers, and approximately 10 per cent of the traffic of the eastern group. The general impression that the New England roads carry a relatively small amount of agricultural products was said to be incorrect, as well as the impression that those roads have a sufficiently large percentage of high-grade manufactured articles from which the amount of a reduction on agricultural products could be recovered. It was pointed out that it is questionable whether any additional revenue could be obtained by a substantial increase in the rates on less than carload traffic because of the danger that such an increase would drive more of this traffic to highway motor trucks, which already had made substantial inroads with respect to transportation of merchandise freight, and the danger to the industrial welfare of New England from any material advance in the rates on articles there manufactured must not be overlooked.

In conclusion, the New England carriers said:

1. That the Hoch-Smith resolution cannot lawfully be applied in any way which would reduce the earnings of any carrier or group of carriers below a fair return on the value of its or their properties.

2. That under the present rates the New England carriers are earning much less than a fair return on the value of their properties.

3. That the revenues from the transportation of products of agriculture constitute so large a proportion of the total revenues of the New England carriers as a group and of the Bangor & Aroostook in particular, that any general reduction in the rates would result in very substantial losses in revenue.

4. That the proportion of manufactured products of high value transported by the New England carriers is so small in proportion to their traffic in products of agriculture as to make it impossible to recover any substantial part of the revenue lost by reduction on the latter traffic by increases on the former.

5. That because of the opportunity of transporting manufactured articles within New England and to and from that section by motor trucks and coastwise vessels, a material increase in the railroad rates on those articles might not increase the net revenues of the New England carriers.

6. That because of New England's geographical location, a drastic increase in the rates on manufactured articles produced there might have an unfavorable effect on industry in that section.

C. & N. W. Statement

The Chicago & North Western and the Chicago, St. Paul, Minneapolis & Omaha submitted a statement supplemental to that filed by the western carriers.

"If in this Northwest country present rate levels are so low that the continued maintenance of an adequate system of transportation is menaced," they said, "it is the duty of this commission under the resolution to advance rates a sufficient amount to insure the needed revenues. We submit that an examination into the earnings of respondent and other carriers in this territory will disclose, beyond all doubt, that they have been operating under an inadequate and confiscatory level of rates. It will disclose railway systems, once prosperous and flourishing, reduced in financial standing and earning power to a point where they can no longer attract the capital essential to enable them to carry on further development of the great country they serve. Whether that condition is to go from bad to worse, or is to be corrected, is now before the commission."

Railroad Owners' Association

J. D. Shatford, chairman of the Railroad Owners' Association, declared that the rate structure, as now existing, is so low as to return an inadequate amount for proper maintenance, operation and return on the investment, and that "this is the worst calamity that could happen to agriculture and to industry in general. Therefore a rate that will provide for proper maintenance, operation and return on the investment, is clearly and logically in the interest of all."

"It is manifestly better for the farmer to pay higher rates than he is now paying toward the functioning of these properties, that their services may at all times be of the best, in order that he can move his produce to market without delay. This value to him is unquestioned. Then what would an advance of 10 per cent over present rates mean to him, when compared with the great saving to be made by efficient service?"

The statement says that there are unquestionably many rates that need adjusting but that these adjustments should be left to the commission. Then follows a discussion of the condition of the four principal roads in the Northwest, showing that from 1914 to 1917 they earned 5.86 per cent on their investment whereas in 1924 they earned only 3.4 per cent and that in their territory freight rates were advanced only 38 per cent while in other sections 54 per cent was the advance made. "No investor will now put a dollar of his savings in these transportation systems," the statement says, "Instead, in many instances, the investor is disposing of his holdings at great loss and sacrifice, causing him to become so dissatisfied that his trend of thought is running in a dangerous direction."

Statements on Behalf of Agricultural Interests

T. C. Atkeson, Washington representative of the National Grange, filed a statement saying that the depression in agriculture still exists and that freight rates have not been adjusted to remedy the inequality. The average contribution made by agriculture to the maintenance of the railroads through freight charges is out of line with the average contribution made by manufactures, it was declared, and the freight charged on each ton of agricultural products handled by the railroads is out of line with the freight rate charged against each ton of other products. The necessity for consideration of freight rate problems with a view to reducing rates wherever possible on agricultural products is said to be emphasized by the need of existing industrial centers for changes in rates which protect their own food supply. However, "lest this be construed into a mendicant's appeals for alms," the statement

added, "let it be stated here with some emphasis that those engaged in agriculture will take care of themselves whether there is any relief given through freight rates or not."

The American National Live Stock Association said the primary and fundamental proposition of the Hoch-Smith resolution is that there is no constitutional principle that prohibits Congress itself from making any rate relationship it pleases. The most that could be claimed in that regard, it continued, was that Congress could not require a carrier to perform service at an actual loss.

"Adequate transportation does not mean adequate or reasonable return to each road. If it did the resolution would fall itself. The objection to the resolution that it cannot be carried out without giving undue preference to products of agriculture, including live stock, is answered in a sentence: Preferences declared by law are not undue, hence not unlawful.

"The contention that losses due to such reductions must be made up, and that provision be made therefore, necessarily is a matter for after consideration, and not a condition precedent to compliance with the requirements of the resolution. We feel confident that no specious argument based on the reported inability of western groups of railroads to afford the reduction and render adequate service will be considered. The better service they give livestock, the more they make and less they lose."

The Farm Bureau Federation

The American Farm Bureau Federation referred to a number of cases pending before the commission involving rates on agricultural products and livestock which it said should be decided in accordance with the resolution.

The American Fruit and Vegetable Shippers' Association said the resolution introduces a new and important rule of evidence "which promises to be controlling in the final analysis of a rate adjustment," referring to the provision directing the commission to consider the conditions that prevail in the several industries to the end that commodities may move freely, and it expressed the opinion that the commission should investigate the rate structure with a view to evolving some plan that would place freight rates on a more scientific basis.

Poultry and Egg Shippers

The Southern Poultry and Egg Shippers' association asked for a rehearing under the resolution of a case involving rates on live poultry from the South. The North Dakota Farm Bureau Federation asked an investigation of the level of carload express rates on horses from points in North Dakota to the East. The Millers' National Federation asked that rates on flour be made no higher than rates on wheat. The Wenatchee Valley Traffic Association asked for a reduction of transcontinental rates on boxed apples from the Pacific Northwest. The California Growers' and Shippers' Protective League expressed the belief that the record now before the commission in Docket 15,137 will suffice to present the economic condition and needs of the California deciduous fruit industry and to show the necessity for rate relief. The Michigan Canners Association asked for early and substantial relief from "excessive and undue freight rate disadvantages." The Memphis Merchants' Exchange and the Memphis Grain and Hay Association suggested that a committee be appointed to carry out a thorough readjustment or revision of the rates on grain, grain products and hay. The American Fruit Growers' Inc., of Illinois submitted detailed information in support of a complaint against several specific rates on products shipped by its members. The Live Poultry and Dairy Shippers' Traffic Association asked for reargument and

reconsideration of a case involving rates on live poultry from the Southwest.

B. L. Glover and Clyde M. Reed, representing a number of cement companies, filed a statement to show that cement is bearing more than its just share of the transportation burden and that even though rates on other commodities might be increased rates on cement ought not be changed in this investigation except as to intrastate rates lower than interstate rates, rates within large terminals and rates for short hauls to large markets. The American Newspaper Publishers' Association submitted an argument that newsprint paper is not a commodity upon which "compensating increases" might properly or lawfully be placed if it is found necessary to reduce rates on any other specific commodities. The Pulp & Paper Traffic League also filed a statement saying that pulp and paper are not commodities on which compensatory increases may properly be placed. The West Coast Lumbermen's Association expressed opposition to any increase in rail rates on lumber from Pacific Northwest to destinations in the United States that might be suggested to offset reductions on other commodities.

Views of Commercial Organizations

In a statement on behalf of the Chicago Association of Commerce, and the Chicago Shippers' Conference Association, the view was taken that the resolution does not change the interstate commerce act.

"We do not think that the rate structure of the country is in the chaotic condition ascribed to it and which presumably led to the enactment of the Hoch-Smith resolution," the statement said. "The present rate structure is very largely the result of more than thirty years of the exercise of its regulatory powers by the commission. There may be, and doubtless are, here and there, maladjustments which should be corrected, but these adjustments are, and have been, constantly receiving the attention of the commission. The Southeastern Class Rate Case, the Southwestern Rate Case, the investigation of grain rates, the Live Stock Case, and the Eastern Class Rate Investigation are all evidences of the commission's activities in this direction. "We think that the enactment of the Hoch-Smith resolution was unnecessary, and that no material benefit will result from the investigation, more than would have resulted had the commission been left free to continue its investigations, undertaken from time to time, either on its own motion, or upon formal complaint, as it has been doing in the past."

Because of the burden imposed on the commission and the expense to the government, shippers and carriers, the brief said, enactment of the resolution was ill advised, and any general investigation of the rate structure necessarily creates an atmosphere of uncertainty resulting in disturbance to the trade and industry of the country. The commission could do a great deal toward removing this element of uncertainty by proceeding with its investigation as speedily as possible, by issuing a tentative report, and, as soon as practicable after June 15, by issuing an announcement of its interpretation of the resolution and the course it proposes to follow in the general investigation.

"If the commission should construe the resolution as an instruction from Congress that due to the depression of agriculture an immediate reduction in rates on such commodities should be made, we believe it will have a very serious effect upon the present business of the country, and particularly upon the industries of the Middle West," the statement said.

Illinois Manufacturers' Association

The Illinois Manufacturers' Association said it had no fault to find with the resolution, but that one of the evils

which the investigation might cause would be serious disturbance to business resulting from uncertainty as to future freight rates. The association argued against "robbing Peter to pay Paul" in the matter of readjustment of rates, and urged adoption of procedure that would militate against "the hardships of unexpected and unneeded change."

Massachusetts Industries

The Associated Industries of Massachusetts said it would appear that the commission is required to so adjust the freight rate structure as to (1) assure the maintenance of an adequate system of transportation as a whole; (2) provide a fair return upon the value of the carriers' property; (3) promote the free flow of commerce; (4) promote the natural and proper development of the country as whole, subject at all times to the prohibitions of the first four sections of the interstate commerce act. The statement said the resolution authorizes and directs the commission "to discard the mileage yardstick and re-establish the principle that freight rates should be made for the purpose of effectuating the widest possible distribution of commodities by affording producer and consumer unrestricted access to the common markets."

The Alabama Public Service Commission took the position that a separate proceeding to consider the temporary needs of agriculture should be instituted, if the depression referred to has not already been relieved, but that the proceeding now pending involving Southeastern rates should proceed without interruption.

The Eastern Manufacturers of Confectionery and Chocolate Traffic Bureau filed a statement saying that rates on its products should be adjusted so as to enable the commodities to move freely.

The Augusta Traffic Bureau asked the commission to consider the Southern adjustment in an independent manner and "with due regard to the healthy financial condition of the carriers of that group."

The National Association of Waste Material Dealers, Inc., asked for an investigation into the rates on waste materials which it is contended should be reduced to a basis more in line with the value of the commodity.

New England Interests

The Boston Chamber of Commerce and the New England Traffic League said the resolution does not add to nor detract from the provisions of the interstate commerce act but urged that the utmost dispatch be made by the commission in pursuing its investigation and in reaching a conclusion to remove the feeling of uncertainty in business.

Tanners' Council of America

The Tanners' Council of America said that, in view of the conditions under which the tanning industry is obliged to operate and the fact that it is a public necessity, it was felt that the industry was entitled to a reduction in the transportation costs of hides, skins, leather, etc.

The Springfield (Ill.) Chamber of Commerce said that, as between communities, there is now and has always been a decidedly unequal distribution of transportation costs and that on the whole, interior points are seriously prejudiced as compared to the so-called rate-breaking points. Particular attention was directed to the paving brick industry in the Middle West, allegation being made that the rates had caused the deplorable condition of that industry.

Ohio Coal

The Southern Ohio Coal Exchange said the economic condition of the coal regions of southern Ohio is such now, and had been for such a long period of time, as to present a phase of the investigation that calls for serious con-

sideration by the commission. It said the coal industry of southern Ohio was and had been in a most deplorable state and that its markets of consumption had been taken from it by an unjust freight rate situation until its continued existence as a coal shipping region is threatened.

The Eastern District Lime Traffic Association called to the attention of the commission the rate situation with respect to lime in trunk line and C. F. A. territories, which the association said, is burdensome, and that the industry is "fairly staggering" under the weight of the present maladjustment in the rate structure.

The Sioux City Chamber of Commerce, traffic bureau, the Sioux City Grain Exchange and the Sioux City Live Stock Exchange, of Sioux City, Ia., said agricultural industries would not be benefited by a decrease in rates in the raw materials of agriculture and an increase in the rates on products thereof as prepared for consumption, and that the commission, when dealing with such commodities, should consider the entire transportation from the producer to the consumer.

J. H. Henderson, commerce counsel of Iowa, and the Iowa Traffic League, said the commission should investigate the interstate rates on all classes and commodities to and from Iowa as compared with the general level of interstate rates throughout that territory and the rates prevailing to and from the large industrial centers and markets with which Iowa is especially competitive.

Other Industries

The El Paso (Tex.) Freight Bureau said that if any readjustment of rates to and from El Paso and that section of the Southwest is found necessary every possible consideration should be given to the harmful effect which would result from the establishment of rates based solely on distance. It also urged that consideration be given to any scale of rates that might be proposed, with a view of establishing and maintaining to and from El Paso and that section of the Southwest a rate structure that would permit fair and reasonable competition with other agricultural sections and with other manufacturing and jobbing cities with which it is necessary to compete.

The Virginia Pig Iron Association referred to "the desperate situation now confronting the Virginia pig iron industry," alleging that the various horizontal increases in freight rates made since 1915 had destroyed the industry.

The Arizona chapter of the American Mining Congress filed a statement to the effect that reduction in rates on agricultural products in the Western district would directly affect the ability of the western carriers to serve mining and smelting industries.

Ohio Utilities Commission

The Public Utilities Commission of Ohio filed a statement in support of that filed by the Southern Ohio Coal Exchange, urging the commission to bring about a comprehensive and non-discriminatory adjustment of rates on coal as between the mines in southern Ohio and the mines located in the inner and outer crescents of West Virginia and Kentucky.

The Hollow Building Tile Association said a large share of its present markets had been practically closed by the present freight rates and that the hollow building tile construction of pre-war times had been forced to local competitive materials by the increased freight rates on hollow tile. It asked for reduced rates.

The Manufacturers' Association of Connecticut, Inc., said it is apparent that Congress "intended to subsidize agriculture through the lowering of freight rates on agricultural commodities without regard to any of the factors which control rate determination," and urged the commission to proceed slowly with the problem at hand.

Freight Car Loading

WASHINGTON, D. C.

Freight car loading in the week ended May 9 continued to exceed the figures for the corresponding weeks of previous years although there was a decrease of 341 cars as compared with the week before. The total was 981,370 cars, an increase of 73,167 cars as compared with last year and of 6,629 cars as compared with 1923. Increases as compared with the corresponding week of last year were shown in all districts and in all classes of commodities except grain and grain products and livestock, while coal loading showed an increase of 18,033 cars, ore loading an increase of 19,425 cars, and miscellaneous freight an increase of 31,018 cars. Livestock, coal and coke showed decreases as compared with 1923. The summary, as compiled by the Car Service Division, is as follows:

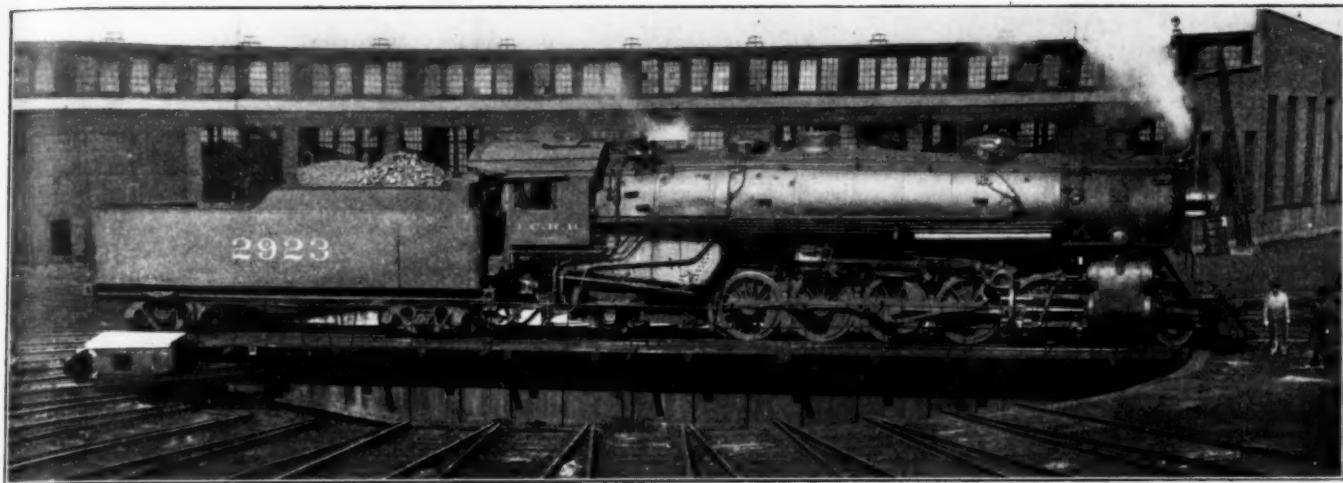
REVENUE FREIGHT CAR LOADING			
	Week Ended Saturday, May 9, 1925		
Districts	1925	1924	1923
Eastern	235,083	222,127	239,374
Allegheny	201,966	192,524	213,812
Pocahontas	47,068	37,766	39,812
Southern	143,990	129,343	137,932
Northwestern	151,683	133,615	151,425
Central Western	136,763	133,115	135,215
Southwestern	64,817	59,713	57,171
Total Western	353,263	326,443	343,811
Commodities			
Grain and grain products	35,915	41,499	31,979
Livestock	27,648	32,040	29,045
Coal	154,214	136,181	175,088
Coke	9,388	9,009	15,315
Forest products	76,484	73,746	74,428
Ore	64,664	45,239	59,616
Mdse., l. c. 1.	260,558	249,108	243,614
Miscellaneous	352,399	321,381	345,656
Total	981,370	908,203	974,741
May 2	981,711	913,550	961,617
April 25	959,225	878,387	962,578
April 18	922,778	876,916	958,042
April 11	917,284	880,937	947,271
Cumulative total, nineteen weeks	17,449,978	16,907,994	17,017,364

The freight car surplus for the period ended on May 7 showed a slight decrease as compared with the preceding week to 329,844 cars, including 149,992 coal cars and 132,207 box cars. The Canadian roads had a surplus of 29,590 cars, including 25,900 box cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended May 9 showed only a slight increase over the previous week, practically all of which was from an increase in merchandise of 569 cars and in miscellaneous freight of 220 cars. Grain and coal loading continued light and forest products showed little change. Compared with the same week last year total loadings declined 4,403 cars. Merchandise was heavier by 870 cars and other forest products by 560 cars but grain was lighter 3,160 cars and coal by 1,889 cars.

	Total for Canada			Cumulative totals to date	
	May 9,	May 2,	May 10,	1925	1924
Commodities					
Grain and grain products	5,551	5,992	8,711	118,227	146,351
Live stock	2,042	2,225	2,277	42,387	41,221
Coal	2,016	1,965	3,905	81,121	93,136
Coke	246	281	326	5,671	4,811
Lumber	3,571	3,597	3,835	58,908	65,619
Pulpwood	1,693	1,855	1,824	65,701	67,418
Pulp and paper	2,171	2,024	2,079	40,079	39,894
Other forest products	2,736	2,786	2,176	57,821	56,268
Ore	1,355	1,172	1,205	22,519	19,513
Merchandise L. C. L.	16,660	16,091	15,790	277,096	256,207
Miscellaneous	12,744	12,524	13,060	199,941	294,551
Total cars loaded	50,785	50,512	55,188	969,471	995,089
Total cars received from connections	32,623	32,792	32,049	630,358	650,737



Elimination of the Need of Balancing Locomotives on the Turntable Saves Time

Simple Change Converts Turntable to Three-Point Type

By David J. Jones

Mechanical Assistant, Engineering Department, Illinois Central, Chicago

THE introduction of Mountain type locomotives on the Illinois Central created a difficult problem at two locomotive terminals because these locomotives were too long to be turned properly on the 85-ft. turntables in service at these two terminals. The locomotives have a wheel-base of 77 ft. 8½ in., an over-all

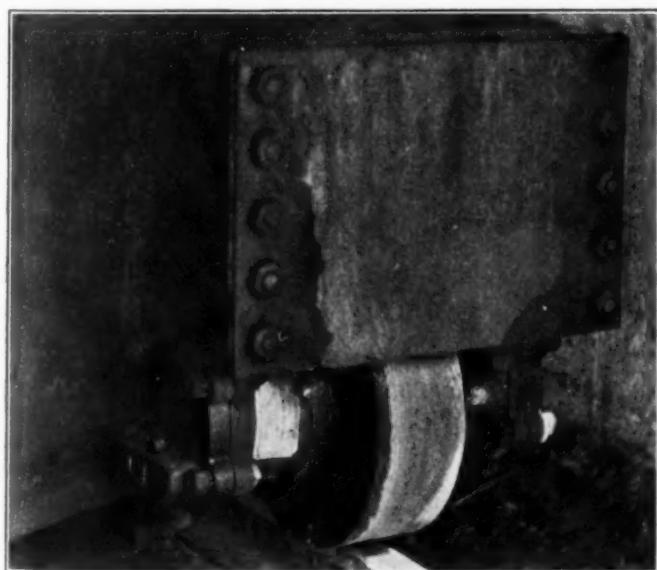
possible to balance the locomotive on the turn tables.

To install 100-ft. tables at these terminals would have required large expenditures. At one of the locations it would have been necessary to demolish an old incline-type coaling station and replace it with a modern station requiring much less ground area. It would also have necessitated the rearrangement of the tracks in the vicinity of the table and the moving of some buildings at both of the locations.

The girders and centers of the two 85-ft. turntables were in first-class condition; one being in service approximately 12 years and the other about 8 years. For this reason thorough consideration was given to a scheme for obviating the need of balancing the locomotives on the tables by converting them from the balanced type to the three-point-support type, that is to make such changes which would permit the turntables to bear on the two end carriages as well as the center while turning.

The prime requisite for this plan is an end truck construction capable of carrying the end reaction of the table without overloading and without excessive friction in the end wheel bearings while turning. The end carriages provided on these tables are of rugged construction, having been so designed to withstand the impact of locomotives passing onto the table, and analysis showed that they were of sufficient strength to safely carry the loads imposed on them with the turntable serving as a continuous beam. One of these tables had eight 16-in. wheels and the other four 12-in. wheels, diameters considerably less than those of wheels usually provided for new tables of the end-bearing type. However, as it was found impossible to introduce larger end wheels without resource to expensive reconstruction of the end carriages it was decided not to make any change in the wheels other than to devise new bearings for them which would assure against overloading and greatly reduce the friction. The principal feature of this plan was provision for the use of high-duty roller bearings.

As seen in the drawing, these bearings consist of a sub-



The New Roller Bearings Were Applied to the Old Carriages and Wheels

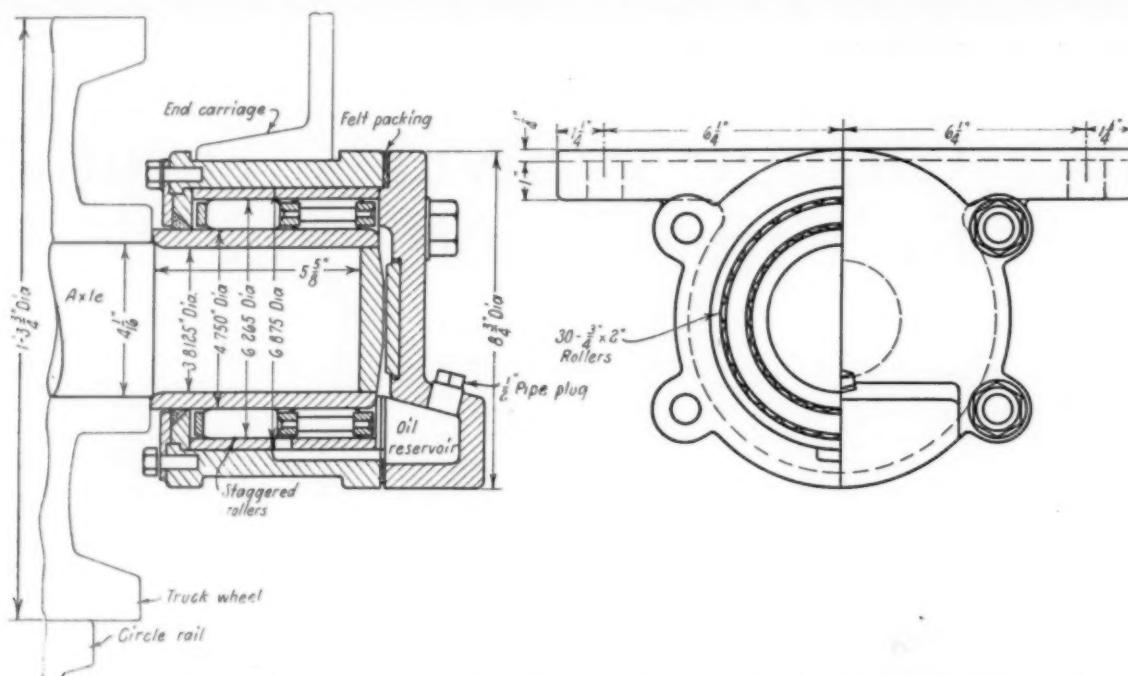
length of 89 ft. 9½ in., and a total weight when loaded with coal and water of 283 tons. The length and the disposition of the weight of these locomotives are such that even with the tender fully loaded the center of gravity of a locomotive cannot be made to coincide with the center of the table unless the end of the tender extends beyond the end of the table. In other words, it was found im-

stantial journal box which is bolted to the under side of the end carriage. This box was lined with a ring of hardened chrome steel, a similar ring or bushing being driven over the axle of the wheel, the clearance between these two rings being such as to afford a suitable annular space for the insertion of the rollers. The journal box is suitably enclosed on the inner and outer faces, with gaskets to make it oil-tight so that the bearings may be run in an oil bath. The outside cover is made of sufficient strength to take the thrust from a lenticular thrust bearing on the end of the wheel axle.

When the turntables were equipped with the new bearings, enough shim plates were removed from the center so that the end carriage wheels cleared the circle rail by $1/32$ in. when in the balanced position. This clearance assured sufficient deflection of the turntable girders before

repeating the operation at the other end of the terminal on a second day.

The changes described, in addition to permitting the turning of heavy power, have several other advantages, among them being the reduction of maintenance on the end carriages due to the elimination of excessive shocks; the saving in time in turning engines by eliminating the necessity of balancing, and reduced wear and tear on the center machinery because of the smaller load imposed on the center. No authentic information is available on the relative power consumption in turning the tables before and after the change was made. Two tractors have been provided for the converted tables as it was found that additional power was required to set the tables in motion. However, once started one tractor is capable of handling the load and the two motors do not



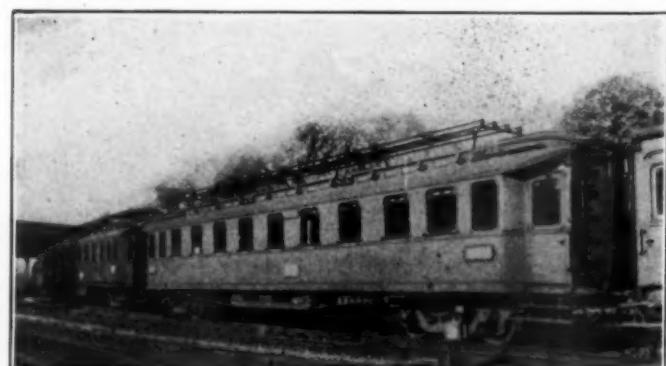
Details of One of the New Roller Bearings Installed on the End Wheels

the end wheels are brought to bear on the circle rail to effect the desired distribution of the live and dead loads on the center and end berings. Each table was also provided with a second tractor, the two tractors being operated from one controller.

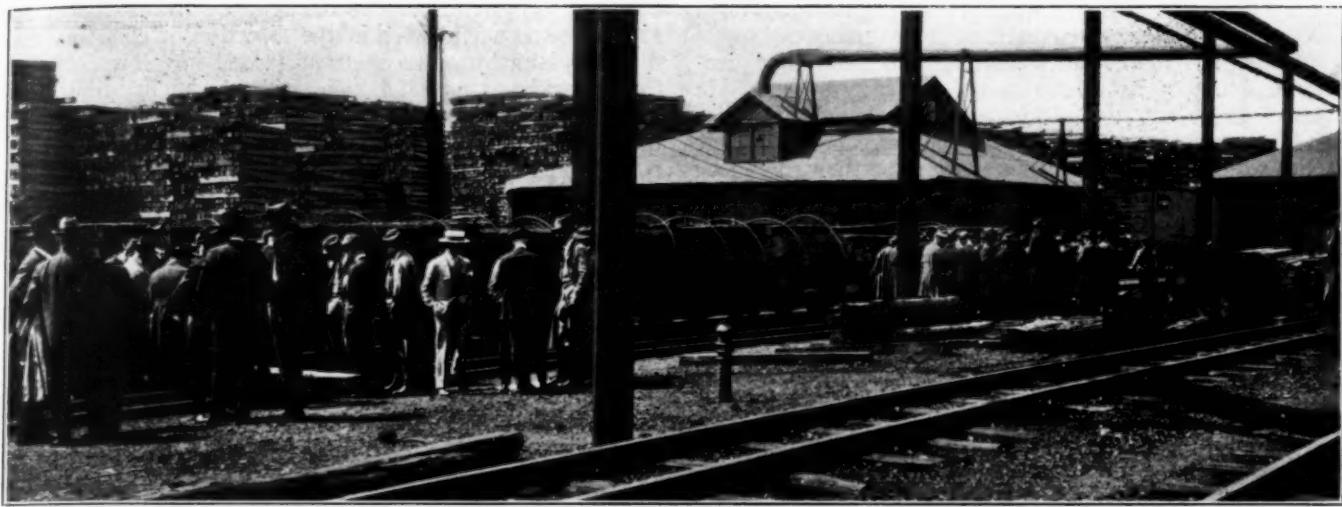
Both of these tables are now handling mountain type locomotives in a satisfactory manner and one of them is used to handle 2-10-2 type locomotives, which have a wheel base of 82 ft. 10 in., an over-all length of 94 ft. 10 in., and a total weight of 295 tons. Because of the success obtained in the conversion of these two tables, the Illinois Central has converted two other turntables for the purpose of handling the same classes of locomotives and all four of these turntables are rendering effective service.

The plan for converting these tables has not only effected a saving in cost as compared with the expense of providing new turntables but was carried out with an extremely small amount of interference with the round-house operations. The time required, exclusive of preliminary work, for effecting the change is approximately 10 working hours. Since approximately half of this time is expended in carrying out the work at each end of the table, the change can be made with the minimum of interference to the operation of the terminal by carrying out the changes at one end of the terminal at one day and

use any more current than would be used by one after the table has started to turn. The work in connection with these changes was done by local railway forces under the direct supervision of the engineering department.



Telephone Connections with Moving Trains Are Being Experimented with in Germany—Connection Set Up by Induction Between Wires Strung Along Right-of-Way and Antennae on Roofs of Cars



Ties Are a Large Item of Railway Purchases. Their Cost Exceeded \$125,000,000 in 1923

Purchasing and Stores Officers Hold Annual Convention

*St. Louis meeting shows progress in modernizing methods—
Marked accomplishments in stock simplification*

DIVISION VI—Purchases and Stores—of the American Railway Association, with A. W. Munster, purchasing agent, Boston & Maine, officiating as chairman, C. D. Young, stores manager, Pennsylvania, as vice-chairman, and W. J. Farrell, A. R. A., as secretary, held its sixth annual convention on May 19, 20 and 21, at the Hotel Chase, St. Louis, Mo. The proceedings included addresses from R. H. Aishton, president, American Railway Association; J. H. Waterman, superintendent tie and timber preservation, Chicago, Burlington & Quincy; Professor W. J. Cunningham of Harvard University; and reports from 17 committees, involving discussions of forest products, stores department buildings and facilities for handling material, classification of material, reclamation of scrap, unit piling of material, standardization and simplification of store stock, control of line stock, supply train operation, office appliances, records and organizations, and rules. The committee reports were supplemented by a number of special papers presented by individual members.

The meeting was the largest which has been held in the history of the association and was marked throughout with animated discussion. A total of 777 persons were registered for the opening exercises, including 396 delegates from railroads and 381 guests and other visitors.

The following officers were elected for the ensuing year: Chairman, C. D. Young, stores manager, Pennsylvania System; vice-chairman, D. C. Curtis, chief purchasing officer, Chicago, Milwaukee & St. Paul; and secretary, re-elected, W. J. Farrell, American Railway Association. The place of the next meeting will be determined in January, 1926.

The address by J. H. Waterman was of an inspirational character, being devoted to a discussion of the human factor in purchasing and stores work. With the Biblical phrase "Let's" for a text, Mr. Waterman emphasized the

"us" in developing and sustaining that loyalty throughout the department which is indispensable to providing the service to the railroad for which the department is maintained. It was his endeavor to impress upon younger men that this service should be considered an opportunity.

W. J. Cunningham for Lower Material Balance

Impressed with the fact that the annual material balance of Class I railroads runs from 600 million to 700 million dollars, representing roughly \$3,000 frozen capital per mile of line, and committed mentally to the proposition, from a study of depreciation of stock, interest charges and labor costs for handling, that this balance was excessive, W. J. Cunningham—James J. Hill Professor of Transportation at Harvard University, addressed himself to a consideration of methods by which the situation might be corrected. Speaking from his knowledge of the conditions under which stores officers worked in earlier years on many railroads, it was his observation that in this work the interests and problems of the stores officers invited primary attention. This was not only because of their intimate contact with the conditions affecting the handling and use of material or their potential capacity to assume the desired supervision over it; it was particularly because of the lack of recognition they have suffered from managements and the less opportune position occupied for accomplishing their aims than the purchasing agents. It is not only essential but there is every justification for exalting the importance of the stores department if material balances are to be reduced without jeopardizing operation. While the railroads have shown a disposition in the right direction by departmentalizing stores work and clothing stores officers with more clearly defined authority than in the past, he pointed out that much remains to be done. It is not sufficient, however, to expect the management to study the problems and accomplish-

ments of stores officers, but indispensable for stores officers to sell themselves to their managements.

His diagnosis of the weakness and wants of immediate situation brought out several suggestions. He asserted first that the stores officers planned too far ahead of performance; that principles accepted at their meetings are not adopted as extensively as they should be and that they should equal at home their collective enthusiasm demonstrated at their conferences. He criticized the Railway Accounting Officers' Association for their refusal to adopt the classification of materials sought by the Division, and as his second point, admonished the

Division to fight for this recommendation until they won. He set up as a vital step in the direction of economy and the establishment of recognition needed for stores officers, the adoption of a real budget of material handling, and emphasized the desirability of stores officers shaking off their temerity and insisting upon their attendance at all conferences affecting the utilization and handling of supplies, and proclaiming their cause on all such occasions.

He recommended finally that the Division establish a bureau for the compilation and promulgation of statistical information concerning their work.

R. H. Aishton Discusses Purchases

In his address R. H. Aishton, president of the American Railway Association, employed the significance of the present year historically to emphasize the magnitude of the expenditures made annually by the railroads for materials, the substance of his remarks going to show that the expenditure by the Class I railways of \$1,343,000,000 for materials and supplies in 1924 represents no less an expenditure than \$1,533 every hour from 1825, when the first railroad in the world was opened, to September 9 of this year. Mr. Aishton expressed satisfaction with the progress of the Section, but reminded the Section of its continuing responsibility to study ways and means in the direction of greater economy and efficiency. He re-emphasized the importance of efficiency in the purchasing and stores work as a factor in public relations. His remarks are presented in part as follows:

Statements recently prepared by the Bureau of Railway Economics showing the expenditures of Class I railroads for the purchase of fuel, materials and supplies for the year 1924, and used in operation and maintenance, indicate a total of \$1,343,000,000. This does not include materials used in new equipment or construction supplied through outside builders or contractors.

It has just been 100 years since the first railway train in the world moved. Since the first train mile was manufactured on the Stockton and Darlington in England in 1825, our country has passed through a transformation never equalled in history. When the first steam engine was making its initial trip, the United States was composed of only 24 states, just half the present number, and was anything but united physically. It required transportation to lend emphasis to the word "united."

Suppose that when this first train moved off under steam, and rail transportation was born, we had started to spend money at the rate of \$1,533 every time the clock

struck the hour and continued this practice 24 hr. a day from then on. By the time Morse made his first successful demonstration of the telegraph instrument, we would only have expended a little over \$174,500,000. By the time of the outbreak of the Civil War, 35 years later, we would have accounted for only \$470,000,000. By the time Bell had perfected his telephone in 1871, the outlay would have totalled nearly \$685,000,000. As late as the outbreak of the Spanish American War, it would not yet have reached the billion mark, and by the time the Wright Brothers had made their first successful flight of an airplane at Kitty Hawk in 1903, it would have just topped the billion mark. When the Kaiser had his misguided notion for world dominion in 1914, our hourly expenditures would have begun to approach the grand total, standing at nearly \$1,200,000,000 but you would still have to continue until the clock struck noon on September 9 of this year, at the hourly rate of \$1,533, before the expenditures would reach the figure of \$1,343,000,000 which was spent by Class I railways last year.

Purchasing 26 per cent of the bituminous coal output, 27 per cent of the steel production, 25 per cent of lumber production and a large percentage of products of industry, and still maintaining a record of efficiency and economy, it is a record worthy of commendation.

My only advice is to leave no suggestion uninvestigated that tends towards more efficient and economical service. Regardless of personal traditions and precedents, if some better way is developed of doing some particular job, if it has merit and produces greater economies, don't hesitate to adopt it. The answer you are able to give as to economy in purchasing, distribution and care of the materials and supplies, will in a large measure govern the judgment of shippers and the public as to the effectiveness of railway management.

Report on Forest Products

In the report on forest products, numerous recommendations were offered for the guidance of railroads in purchasing or handling this commodity. Principal among these recommendations are the following:

Standards

The committee recommends the adoption of the American Lumber Standard grades and sizes of softwood yard lumber and red cedar shingles, the provisions affecting measurement, description, grade marking, the definitions of defects and blemishes, lumber abbreviations, and nomenclature of commercial softwoods.

Pending standardization of car lumber there is nothing

to prevent utilization of American Lumber Standard yard boards of standard or extra standard thicknesses, the rough sizes of which will yield M. C. B. standard lumber. The committee recommends the extra standard sizes as being the most suitable for railroad purposes.

Cross Ties

The committee impresses upon all roads the importance of furnishing adequate supervision of inspection in the field as well as a careful check of ties at the treating plants or other storage points after delivery. It is found that the fault is not confined to the acceptance of rotten and poorly made ties alone but to overgrading and in

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some cases to acceptance from one or two grades. Overgrading by one grade increases the purchase prices from 10 to 15 cents per tie.

It is also recommended that all chief inspectors and supervisors of inspection call meetings of inspectors semi-annually at treating plants or points where ties are stored, for the purpose of going over the stock in general and pointing out errors in grading, both as to size and quality.

Conservation of Forest Products

The committee points out the importance of the railroads, and particularly the Purchase and Stores Division, taking the lead in the conservation of forest products. The committee calls attention to President Aishton's article on forest conservation which was presented at the National Conference on the Utilization of Forest Products held in Washington, November 19 and 20, 1924. [Published in *Railway Age*, November 22, 1924, page 953.]

It is recommended that earnest consideration be given to the fullest practicable use of preservatives to conserve existing and future supplies, and to retard advancing costs.

The committee emphasizes the importance of proper supervision of grades and tally in lumber purchases. This matter is just as much of importance as the purchase and proper inspection of cross ties.

The committee also stresses the importance of purchasing only such forest products as will give the maximum service for the money invested. Too seldom the question of price or initial cost is primary to the annual cost of the service. It is evident if one grade of the same commodity will give longer service than another grade, we are justified in paying higher prices for the more lasting material.

Second-Hand Lumber

Many railroads have been taking steps towards the utilization of second-hand lumber. It has been demonstrated that much of the second-hand bridge and building

material can be reclaimed by a careful survey with the idea of using reclaimed material for such purposes as they are suitable.

Second-hand bridge stringers, caps, braces, etc., can be reduced to sizes that will make planking for platforms, stock yard fences, crossing plank and many other items, pile heads and defective piling can be cut into stock yard posts, right of way fence posts, etc., by the installation of suitable inexpensive equipment at some central point where the above material is generally accumulated. Such equipment would consist of pony carriage sawmill having a circular saw with inserted teeth with cut-off saw so arranged that material could be handled at a minimum cost.

This practice has given excellent results on the Union Pacific and the Chicago, Burlington & Quincy for the past 15 years. A study of the different operations on these railroads indicates that lumber can be reclaimed at from \$3 to \$6 per 1,000 ft. b. m. This figure covers the labor cost, including supervision, and shop expense, but does not include interest on the investment or depreciation which varies with the amount of work performed.

Information available emphasizes the fact that there should be concerted effort to increase straight car loading, i.e., to load but one specie to each car.

The members of the committee were: C. F. Philbrook, (B. & M.), chairman; T. H. Clarke, (Sou); R. A. Bury, (N. Y. C.); H. Condon, (Penna.); G. W. Lorenz, (U. P.); S. M. Elder, (B. & O.); F. V. Weisenburger, (N. P.); O. A. Schultz, (C. B. & Q.), and H. C. Pearce, (C. & O.)

The committee's recommendation that the American lumber standards for soft woods be adopted was approved. The discussion of the report was limited to a dispute over the committee's statement that 9 to 12 months is required to properly season ties, which was finally changed to read "9 to 12 months is required to properly season ties in certain sections."

Report on Store Department Facilities

During successive years the division has considered the design and arrangement of storehouse buildings and facilities for handling material with a view to emphasizing certain details which should be considered in remodeling work or new construction and arriving at an ideal plan for this service. Additional information was furnished this year in a report, the principal conclusions of which are the following:

It is gratifying to know that during the past year many of the larger railroads have made progress in providing modern store buildings and oil houses in line with previous recommendations. This encourages further effort in knowing the ideas advanced are practical and stand the close analysis given by engineers and the managements.

Fire Protection

During 1923 railroads of the United States lost \$867,347 through fires in store department buildings. The members of this association cannot too strongly advocate fireproof construction for all structures housing material, with the additional protection of modern fire fighting installations designated or approved by insurance underwriters. Metal-covered wood frame buildings should be discouraged in plans for new construction as this type is only slightly better protection against fire than an all-wooden structure.

Oil houses and paint storage should only be considered

of fireproof construction and fire prevention should be promoted by the use of chemical inventions and steam line smothering systems, with the further protection of sand buckets, which can be used advantageously if applied instantly on the first outbreak of fire.

Design of Buildings

It is highly important, regardless of limited space, that careful study be given to placing of stores, platforms or other structures at points convenient to the shop, rip tracks, etc., served. One of the adverse conditions found by the committee was a plate steel storage located 500 ft. from point of use.

With the custom of building storehouse platforms at car floor level a basement and one-story structure is worthy of consideration. The four-foot platform elevation provides nearly half of the basement head room, permitting ramps of easy incline to the ground surface. There are many articles that are stored best in basements and a considerable saving in labor is possible in handling supplies in and out as compared with buildings with no basement or a two-story or higher building. If seepage adds greatly to the expense of waterproof basements the entire building should preferably be on one floor, provided ground is available and its value for other development does not make it prohibitive.

Regardless of the number of floors that may be required a height of ceilings of not more than 10 ft. is considered

ample to furnish sufficient light for good working conditions. This works a further advantage in restricting shelving and bins to not more than 7 ft. in height, allowing 3 ft. for an overhead sprinkler system and enough clear space to meet insurance underwriters' requirements.

Investigation reveals a growing preference for steel sectional shelves and racks, which adds much to protection against fire and lessens insurance rates.

To utilize floor space, shelving should be placed at right angles to the side walls with the dimensions of shelving considered in original plans for window locations between. Any building not exceeding 60 ft. in width should be provided with only one aisle.

A better lighting effect is obtained with the use of so-called daylight racks. With windows between the material racks a direct ray of light is admitted throughout the face of the shelving and where it is most essential. An indirect effect results from transom windows with shadows cast at all times over portions of the racks nearest the ways.

An important factor of store department efficiency is that of roadways of permanent type. In an exhaustive study given this subject by a large railroad it was found that with a truck loaded with 2,000 lb. and each trailer with a load of 2,000 lb. the starting draw-bar pull on wood was 165 lb., on metal 95 lb., on brick pavement 125 lb., and on cinder roadway 475 lb., as against 90 lb. per trailer on concrete roadways, while it took a steady pull of 225 to 250 lb. to haul one loaded trailer on cinder road, 57 lb. on brick pavement, 47 lb. on rough surfaced concrete and 30 to 35 lb. on smooth trowel-finished concrete.

The recommendations of the committee were supplemented by tabulated information on the stores facilities built by the railroads in recent years.

The members of the committee were: L. B. Wood (S. P.), chairman; R. M. Blackburn (C. & N. W.); E. D. Hagerty (Penna.); E. A. Workman (B. & O.); N. V. Oldenbuttel (A. C. L.), and D. C. Curtis, (C. M. & St. P.)

Report on Standardization and Simplification

The report of the Committee on Standardization and Simplification of Store Stock was a summary of information concerning the progress being made in this direction by the railroads as developed by a questionnaire. Selected portions of the report follow:

The questionnaire was sent to 30 railroads. Of the 25 making replies, 10 are carrying their material under the A. R. A. classification of 1922. Of these 25 roads, 19 maintain a master stock book and 16 of the 25 roads indicated that the stock book is used as a basis for standardization and the elimination of unnecessary kinds and sizes of material.

Only 10 of the 25 roads replying were able to give the exact number of items carried in their material and supplies account as of January, 1924 and 1925.

Progress Being Made

A total of 14 of the 25 roads have employees designated to study the standardization and simplification of store stocks, and the elimination of obsolete, inactive and unnecessary kinds and sizes of material. Of these 14 roads at least 4 have organizations which are producing satisfactory results.

One road has delegated the work to a supervisor of stores catalog, under the direction of the stores manager. During 1924, in addition to general simplification work, the number of items of rough and surfaced lumber was reduced from 1,082 to 821. The number of finished car and locomotive parts was reduced from 2,040 to 1,299. The number of items of bar iron was reduced from 486 to 67. The number of items of soft steel bars was reduced from 461 to 284. The number of items of steel sheets, 3/16 in. and under, was reduced from 963 to 696. The number of items of steel plates, over 3/16 in. in thickness, was reduced from 1,313 to 1,164; and firebox steel plates from 183 to 161.

On a second road this work was delegated to a special committee, composed of an executive assistant, assistant to chief operating officer, assistant general mechanical superintendent, the purchasing agent and the general storekeeper. This committee reduced the number of items in material and stores stock by 4,936 in 12 months.

A third road has two committees engaged in this work. One committee composed of the assistant to the manager of stores, superintendents of stores, traveling store in-

spectors, central office manager and classification clerk, meet at stated periods and review the classification of material and agree on the elimination of various items which should not be ordered or carried in stock. Another committee composed of the assistant mechanical engineer, the superintendent of apprentices and production, the assistant to the chief mechanical engineer, the assistant to the manager of stores and the traveling inspectors of stores, meet at stated periods and develop the utilization of selected parts. During the past year stock books were corrected by the elimination of 5,457 items.

Recommendations

It is the conclusion of the committee that stores stocks on all railroads are burdened with too great a variety of sizes and kinds of materials, and much economy can be effected by standardization and simplification.

It is the opinion of the committee that in order to obtain the best results: (1) the standard material classification, adopted by Division 6 in 1922, should be used; (2) the use of the master stockbook is imperative; (3) an efficient organization, with absolute authority, should be appointed and maintained on each railroad for the purpose.

The members of the committee were: C. C. Kyle (N. P.), chairman; A. G. Follette (Penna.); R. D. Long (C. B. & Q.); W. A. Hopkins (M. P.); F. J. McMahon (N. Y. C.); J. J. Bennett (I. C.), and C. D. Young (Penna.).

Reception of Report

The presentation of this report, being the first study of the subject made by the section, was received with marked interest by the delegates, whose questions relative to statements in the report resulted in the immediate presentation of a special paper by A. G. Follette on the detailed methods of simplification pursued on the Pennsylvania, which was one of the roads mentioned in the report.

In another special paper G. A. Secor of the Chicago & Alton, discussed the stock book as an aid to standardization and simplification of material, in which he developed in considerable detail how the stock books disclosed the opportunity for simplification on the Chicago & Alton, and the part they played in the elimination of more than 7,000 units of material for stock.

"Pay Dirt" in Standardization and Simplification

By A. G. Follette
Supervisor of Stores Catalog, Pennsylvania System

The Pennsylvania, in common with other roads, having been confronted by the necessity for standardization, has been actively interested in this phase of industrial development and had made considerable progress prior to the termination of federal control; yet when, at that time, the eastern and western lines were merged into one operating system the total number of items of material stock approximated 150,000.

The engineering departments set about unifying the drawings, designs and specifications of the former separate lines into system standards. In the stores department a catalog bureau was organized whose function was to list all the items of material for the system; using the information developed by the engineering departments, identifying items that were identical though differently described, eliminating duplication, and providing standard descriptions with a distinguishing symbol or reference number for each item. As this information was completed for each class of material it was disseminated to all stores points on the system in the form of a catalog.

Items Cut from 150,000 to 74,500

The completion of the first study of all classification accounts resulted in a reduction from the original number of items to 86,900.

Another field of study was presented by special sizes

and kinds of raw material or supplies purchased in the open market which were not standard stock with the manufacturers, consequently involving longer delivery period and generally higher prices.

This procedure has been productive of results in all the classification accounts. The total net results for all classification accounts has been a further reduction of stock items from 86,900 to 74,500.

Simplification of stores stock by reducing the number of items is productive of numerous economies, among which might be mentioned the following: More economical purchasing due to the smaller number of items ordered, with consequent increase of quantity per item, eventual reduction of manufacturing costs, and the elimination of special material which involves higher prices and longer delivery periods; more economy in bookkeeping and better control of stock, which are inversely proportional to the number of items involved; quicker turnover and smaller stock balances, due to a single item of material protecting a greater number of requirements with less tendency to frozen stock with the attendant deterioration, obsolescence and the probability of eventual scrapping because of its special nature; less store house space and consequently more convenient and economical arrangement of stock, and less danger of an undesirable condition of repair work, delayed for lack of material.

Report on Unit Piling and Marking

The report of the Committee on Unit Piling of Material and Numerical Marking was directed principally to disclosing the extent and advantages of unit piling as practiced at present and to explaining the more recent practices of reference marking. The principal observations of the committee are as follows:

The committee finds that the majority of the railroads have adopted unit piling of material, and it is no longer experimental but a standard practice, some roads having completed the installation while others are installing it gradually as the racks and bins are changed to suit the system.

The work is carried on by the regular storehouse forces, which does not cost anything extra, as the same organization would have to be maintained if the material were not properly stored. Any additional cost involved consists of the making of trays and separators, and such reconstruction of shelving as may be necessary. This cost, however, is small as the material used is largely second-hand metal car roofing and discarded lumber.

Benefits

At places where unit piling has been fully developed, a saving in space of at least 30 per cent has been effected. Investigation developed the fact that several roads in planning new storehouses were able to save at least one-third of the space required by the use of unit piling.

Investigation also developed the fact that the time and cost of making a monthly count for stock and ordering purposes as well as annual inventory, has been reduced approximately 40 per cent. Monthly and annual inventories reflect actual amounts on hand, the figures thus obtained being reliable. It tends to keep stocks under

control and within normal requirements, as unit piling enables the stockman to see the size and condition of his stock readily.

On some roads, the maintenance of way department has become interested in unit piling of material stored along the right of way and at tool houses.

This system has also eliminated the discontinuance of shop deliveries to a large extent during the period of taking annual inventory. One of the several major benefits derived from the unit piling system is the elimination of heavy expense that formerly obtained in the preparation of the stock for the taking of annual inventory.

Trays from Discarded Roofing

On the railroads visited by the committee, the metal tray, which is manufactured out of discarded car roofing, is the accepted form of container. These trays are constructed to contain a uniform quantity of material with a removable or permanent marker indicating the quantity. Special markers or signals are also used to indicate a reserve supply located at some other point in the store. In some cases it is not advisable to use trays, but to show a cumulative count with the proper marker on the side of the bin.

The island platform is used extensively on the majority of the roads featuring unit piling. It facilitates the piling of material uniformly as well as visibly at all times for a cumulative count. At the same time, it perpetuates standard aisles for trucking.

The members of the committee were: O. V. Daniels (Penn.), chairman; R. J. Gable (I. C.); L. T. Hoffman (U. P.); J. W. Wade (N. & W.); F. C. Reardon (D. & H.); J. S. Sewall (N. P.), and W. Davidson (I. C.).

What the Stores Expect of the Purchasing Department

By R. C. Harris
General Storekeeper, Pennsylvania System

First of all we must know how the purchasing department expects to act upon orders sent to them. With that information clearly before the members of both departments, each knows definitely what the other is expecting.

While records of consumption furnish the basis for ordering, the cases are numerous where prospective needs, such as unusual maintenance or authorized new work requirements, can not be calculated accurately from consumption records, and we are compelled to prepare requisitions for definite quantities for the use of the purchasing department from opinions which are frequently indefinite and uncertain. When those definite figures later prove to be inadequate, we expect the purchasing department to recognize the reason and to use its best efforts to procure the additional quantities needed, even though it does upset the routine work.

We expect a clear understanding between departments as to whether the purchasing department or the stores department is to follow the delivery of material to destination, and a close adherence thereafter to that decision.

We expect the purchasing department to keep an approximate record at all times of the value of their outstanding commitments in order that both departments may be fully aware of the financial obligations incurred for which those departments are responsible, and which may all become active corporation debts at any time.

Since many commodities, such as forest products, must be ordered far in advance of actual requirements, for seasoning and treatment or for other reasons, and the deliveries of such material must be scheduled by months or otherwise, we expect the purchasing department to use every available resource to make delivery as scheduled.

The responsibility of specifying quantities and delivery dates rests with the stores department; that their records and contacts with maintenance officers give them the necessary information to decide those matters, and that

the responsibility for those decisions should rest solely with the stores department. The purchasing department should unquestionably have the right to suggest changes in quantity, quality or delivery if it believes such suggestions might result in improved service, but no change should be made arbitrarily without the consent of the stores department. If the stores department is to function successfully, it must have definite responsibilities which it alone shall bear. A purchasing department which attempts to carry the load rightfully belonging to the stores department not only weakens the stores department, but removes a source of information and helpfulness which the purchasing department needs for success in its own work.

We believe that the duty of the purchasing department is not only to deliver material at the time and place wanted, but also to see, through the medium of the inspection department, that specifications, standard plans and approved lists are observed and that the material furnished shall conform thereto in every essential detail; also, that the consignee be furnished with necessary documents as evidence thereof and that, in the case of controversy with the seller, prompt action be taken to have proper material supplied.

It is fully recognized that decisions regarding sources of supply and delivery rest with the purchasing department, but we expect that department to take cognizance of information originating at local store points regarding action which is essential in meeting demands for the safe and continuous operation of the company's plant and equipment.

As a fitting corollary to the remarks of Mr. Harris, T. J. Frier (Wabash) undertook in a special paper, entitled, "What the Purchasing Agents Expect from the Store Departments," to represent the viewpoint of the purchasing officers in promoting co-ordination.

Report on Line Delivery of Materials

There are at least two large railroads which ship all material for section forces and other users on the line by local freight, according to the report of the Committee on Supply Train Operation and Line Delivery of Materials. The report is reproduced in condensed form as follows:

In studying the supply car and supply train operation this year the committee has endeavored to ascertain why supply cars are not more generally operated in special trains. Reports from 22 railroads disclosed that 5 roads operate supply cars in special trains, 5 roads operate both supply cars and supply trains, 5 roads operate sets of supply cars in local trains or trains of light tonnage, 5 roads operate supply cars in local trains and 2 roads ship material by local freight.

The committee differentiates between supply cars operated in sets and supply cars, for the reason that some railroads operate elaborate supply car outfits, consisting of as many as 10 cars, in local trains, the equipment carried being as large as carried in some supply trains.

It appears to be the uniform practice to cover the more important branches with supply cars or trains, and ship the balance by local freight from the junction points.

Line Inspection: Where supply cars are operated in local trains in sets or in special trains, it provides the most

practical and economical method of inspection, for the reason that any material needing repairs or found to be surplus can be picked up immediately and returned to store stocks. It also provides a proper check of new material being issued.

Labor Saving Devices: One railroad has an air arrangement for forcing oil and gasoline from tank cars to section storage tanks. This method saves uncoupling and coupling up hose every time the station is reached and expedites delivery. The air to operate this arrangement is taken from the train line. The pressure in the tank at no time exceeds 25 lb., this pressure being regulated by a reducing valve set at 15 lb. On another road a portable crane operated by air is in use. This contrivance has proven efficient in picking up scrap rail, frogs and switch material. Another is using with success a gasoline-operated crane and magnet for unloading and loading heavy frogs, switch material, rail and scrap.

Terminal Delivery: At large congested terminals it was found that the auto truck is coming into more general use. On one railroad auto trucks or trailers are used for the delivery of all material to signal towers, crossing watchmen, gate tenders, agents, large freight and passenger stations and city ticket offices and for all other

supplies used in their largest terminals. Scrap is also picked up by these trucks. The truck is accompanied by operating officers making inspection in the same manner as with the supply train. These trucks are operated on a definite pre-arranged schedule, making deliveries and picking up material every 30 days.

The committee strongly recommends the supply train

as the most efficient method in the delivery of stock out on the line.

The members of the committee were: J. C. Kirk (C. R. I. & P.), chairman; E. H. Polk (S. P.); C. B. Sauls (I. C.); F. S. Austin (B. & A.); C. H. McGill (N. Y., N. H. & H.); J. E. Mahaney (C. & O.); J. L. Sullivan (U. P.); E. H. Lyons (C. M. & St. P.), and U. K. Hall (U. P.).

Report on the Control of Line Stocks

It was the finding of the Committee on the Control of Line Stock, after an investigation of the conditions on various lines, that the practice of handling, accounting and regulating line stock is not uniform. Committed to the opinion that improvement was desirable, the committee recommended the following:

Line Stocks should be understood to include the following groups of material:

1. Cross ties.
2. New, second hand and scrap rail.
3. Frogs and switches.
4. Other track material.
5. Signal and interlocking material.
6. B. & B. material, including lumber and piling.
7. Telephone and telegraph material, including poles.
8. Fuel and water station material.
9. Steel bridge super-structures.
10. Material sent out for work chargeable to Capital Account, or other specific authorized work order jobs.

It is recommended that all of this material be carried in the stock balance of the store department until actually used.

It is recommended that line stocks be under the supervision of the general storekeeper.

The minimizing and controlling of line stocks can be further accomplished by means of supply trains or supply cars regularly operated which serve the same purpose for the line deliveries as the stores delivery for shops. Further, by stated periodical deliveries, inspection can be made of such line stocks and regulated periodically from such service.

It is recommended where conditions warrant that material yards be established in convenient locations, where the requirements of the track and bridge and building departments can be assembled, so as to be available when required and shipments so regulated as to reach the point where required at approximately the time the workmen arrive on the job, so as to eliminate as far as possible material lying exposed to the elements and entirely unprotected, as well as saving the time of the workmen on the job.

The members of the committee were: O. Nelson (U. P.), chairman; L. C. Thomson (C. N.); G. W. Snyder (Penna.); D. H. Phebus (C. M. & St. P.); W. D. Stokes (I. C.); Frank McGrath (B. & M.), and J. F. Marshall (C. & A.).

Report on Store Delivery to Shops

The report on store delivery of materials to users at shops disclosed an effort of the committee (1), to ascertain the prevailing attitude of the mechanical department toward the system in its present state of perfection, (2), to summarize the benefits and (3), to formulate a set of rules which could be adopted as recommended practices. The summary of benefits and the recommended practices are given in the following abstract of the report, which also discloses the extent of development at the present time:

Of 69 railroads canvassed replies from 61 indicate that 25 roads have the store delivery system in effect and working economically, 13 are using this system partially, while 23 roads have not yet inaugurated it. Five railroads installed the system during the past year and 9 expect to adopt the system in the near future.

Benefits

The following benefits are reported on railroads where the system is being employed:

To the Store Department:

1. The elimination of shop stocks except in special cases.
2. Better control of store stock, the store department representatives being in constant touch with the material situation in and about the shops, also securing prompt return movement of unapplied material.
3. Better control of material accounting, by insuring the receipt of orders for all material issued, proper description, etc., thereby greatly reducing the possibility of material moving from stores stock to the user without proper charges being made.
4. A more orderly condition of stock when not accessible to employees of other departments.
5. Avoidance of congestion at the delivery counter and the corresponding delay in time to store employees.

6. A closer check of material shortages, permitting prompt action to obtain the supplies or to make substitutions.

7. The promotion of a wider knowledge of material and its usage among employees.

To the Mechanical Department:

1. Reduced cost of securing material by concentrating deliveries, as several orders can be filled at one time. Also greater efficiency through the employment of trained men in the service at rates of pay lower than those paid mechanics or helpers.
2. More effective handling of material made in shops for store stock which can be delivered to the storehouse on the deliveryman's return trip.
3. Elimination of disorganizing effects of having shop men away from their work, either obtaining material or wasting time through visiting, etc.
4. Machinery kept from standing idle while employees are after material.

Recommended Practices

The committee recommends the following practices in connection with stores delivery of material to users at large locomotive and car repair shops:

To insure its success it should be installed by degrees, starting with one shop and gradually extending to others.

The entire delivery system should be in charge of one man.

It is recommended that all employees in this service wear red caps or badges to designate their employment.

Where trucks and trailers are used the trailers should be spotted at or near machines or adjacent to shops for the handling of shop made materials direct from the point of manufacture to store stock or for intra-shop delivery, the movement of trailers depending upon the work to be performed. This also applies to the movement of scrap or rubbish accumulation. Tractors, trailers, hand trucks and wheelbarrows are generally recommended.

Order deposit boxes should be located in convenient places throughout the shops where foremen may deposit their orders. The order collector should collect orders on regular schedule. It

is the general practice to carry certain stocks at sub-stores, such as bar iron, sheet steel, lumber, etc. Requisitions received for material to be obtained from sub-stores should be turned over to delivery foreman for sorting into various routes.

A good working schedule should be devised that will meet conditions in each shop.

Where telephones are located throughout the plant, orders can be phoned by the foreman to the order clerks in storehouses. The foreman's signature can be received at the time material is delivered.

It is important that requirements be anticipated sufficiently in advance to permit economical handling, especially on heavy items such as locomotive cylinders, wheel centers, etc.

Roundhouse Delivery

On some railroads the delivery of material to users at shops has been extended to include roundhouses. The plan on one railroad is to have the red cap take the orders for the material direct from the mechanic doing the work. These are written on a special form provided for the purpose and are later turned over to the mechanical department to be covered by regularly approved requisitions. Only common material for repairs to locomotives is furnished in this way, it being necessary to secure formally approved requisitions for such items as tools, tinware, etc.

Savings

From replies to questionnaires the committee has made a compilation of costs of delivering material by the store department to users at shops as compared with the method

of having mechanics or their helpers calling for the material at the storehouse.

The committee finds there is a saving of approximately 60 per cent by stores delivery.

By savings is meant that a decrease can be made in the mechanical department payroll or that an equal saving can be realized in shop production. A further saving is also made in the return movement of manufactured material from the shops to the storehouse by delivery men or trucks picking up this material when returning to the storehouse.

On several railroads where store delivery is in operation the store department has assumed the handling of material from one shop to another as well as the transfer of such material as is manufactured on store order made in one shop and furnished in another. This service is designated as intra-shop delivery.

The committee members were J. E. Peery (S. P.), chairman; T. R. Dickinson (B. & L. E.); H. R. Duncan, (C. B. & Q.); W. B. Hall (D. & R. G. W.); A. J. Munn (G. N.); E. W. Peterson (B. & A.), and A. S. McKellog (S. P.).

The report of the committee was supplemented by a special paper by H. R. Duncan (C. B. & Q.) describing in detail the store delivery experiences and methods of the Chicago, Burlington & Quincy where the system was introduced as early as 1911. This paper will be presented in a subsequent issue.

Report on Stationery and Printing

The report of the Committee on Stationery and Printing, of which James Deery (Penna.), was chairman, was devoted principally to the question of standardization. After a study of practices and the attitudes of the railroads with respect to size, quality and weights of paper, the committee considered it inadvisable to suggest a standard for letter forms at the present time. Attention was called to the reports of several railroads that savings can be made by furnishing printers with paper. The committee recommended against ordering more than three month's supply of stationery and printing at one time.

The report was supplemented by a special paper on

private printing plants, submitted by W. W. Fulmer, general purchasing agent, American Railway Express Company, in which he disclosed the printing losses which this company experienced prior to the sale of its printing plant and the resumption of the practice of having all printing done under contract.

The discussion was limited, owing to the little experience of the members with printing problems. The Baltimore & Ohio and Southern Pacific disapproved of the inference of Mr. Fullmer's paper that railroads cannot operate company printing plants with profit to themselves.

Private Printing Costs

By W. W. Fulmer

Purchasing Agent, American Railway Express Company

The American Railway Express Company operated a private plant for several years. During the war and for a year or two after, the cost of everything connected with printing was abnormally high. In 1921 prices began to find their level, however, and an investigation was begun to determine the accuracy of the printing shop costs as compared with those of outside printers.

Our printing shop prices were considered very low, but it was found that in arriving at the costs, neither the salary of the superintendent in charge, rent, nor depreciation were taken into account. As we had about \$155,000 worth of equipment, the depreciation on which averaged 15 per cent per year, this alone was a considerable item. It was decided to sell the shop.

Cheaper to Contract Printing

As a basis for a check we selected 373 of the principal forms and called for prices from six of the largest printers

in the country, based on a two years' contract. Analysis of the successful bidders' prices showed an annual saving over printing shop prices of approximately \$10,000 per year. This, with the salary of the superintendent, rent and depreciation, brought the total annual saving to almost \$35,000. This saving was increased very considerably as we gradually brought all our forms under the contract.

It might be said that this large saving indicated inefficient operation of the company's plant, but this was not the case as it was run about as efficiently as any private plant could be. There are factors entering into the operation of a private plant that cannot but militate against economy. The printing requirements of any one business lack stability, in that there is no steady flow of work to the full capacity of the plant. Because of this, it must maintain a staff sufficiently large to take care of the heavy periodic demands, which means that when the

orders are not running heavy the plant is not working to capacity although the payroll and overhead is continuous. One would naturally think that when the work was slack some of the employes could be laid off, but this is not practical in a private plant, particularly when it is run on a non-union basis with its lower wage scale, as was ours.

With a private printing plant there is more or less tendency to call upon it for work that might ordinarily be avoided. The feeling seems to be that while the plant is there it might as well be used. When such work has to be given to an outside printer, entailing a definite cash expenditure, department heads are likely to think twice and have good argument for a form before recommending it.

Other Subjects

Reclamation. The report of the Committee on Reclamation, presented by the chairman, C. B. Tohey (L. V.), disclosed the attention of the section during the year as having been directed: (1) to revising the list of recommended practices in connection with the recovery and reclamation of material; (2) the development of such a basis of arriving at the cost of handling scrap as to afford comparisons between roads, and (3) collaborating with other scrap producers and consumers in an effort to arrive at a uniform classification of scrap. The committee submitted a detailed list of recommended practices governing the disposition of various classifications of scrap, including its suggestions as to the extent reclamation can be carried on profitably with specified articles of scrap and the various articles into which scrap can be converted, as determined from the experience of member railroads up to the present time. For determining scrap costs it submitted a recommended form of accounting for use by all railroads in place of the existing methods. The adoption of a standard classification of scrap, as developed by the National Conference of Scrap Producers, Distributors and Consumers, in place of the existing standard of the American Railway Association, was considered inadvisable at this time. The report was supplemented by motion pictures of scrap handling at the reclamation plant of the Chicago, Burlington & Quincy at Eola, Ill.

The discussion of the report on reclamation disclosed the continuing irreconcilability of the railroads over the definition of reclamation, but the definitions presented by the committee, together with the other recommendations made, were adopted, following which motion pictures of reclamation practices at the Eola plant of the Chicago, Burlington & Quincy were projected.

Office Appliances. In a brief report presented by the chairman, J. F. McAlpine, (C. B. & Q.) the Committee on Materials and Accounting passed favorably on the use of Fan-fold typewriters, addressing machines and the visible pricing system.

Classification of Material. The Committee on Classification, of which J. T. Kelly (C. M. & St. P.), was chairman, announced the results of a questionnaire which disclosed that 7 per cent of the roads making returns favored an enlargement of the Standard Material Classification, 50 per cent its restriction, and 43 per cent designated their dissatisfaction with the present arrangement. With the aid of these replies the committee recommended: (1) that the present classification is comprehensive enough to include all new devices installed or in the experimental stage and (2) that the Association should adopt as standard only the primary classifications, leaving it to the individual roads to adopt or revise the subdivisional classifications according to local conditions.

The discussion of the report was extended. It was confined principally to the recommended revision of the standard material classification covering sheet steel, which was rejected on the ground that the standard classification should not be altered without the most careful consideration.

Purchasing Records and Office Organization. A report

on Purchasing Agents Records and Office Organization, presented by the committee chairman, J. W. Corbett (C. N.), disclosed further efforts of the division towards the perfection of uniform practices and increased simplification. The principal change in existing standards was the committee's recommendation to eliminate from the standard order form the clause requiring the contractors of materials to warrant against the employment of third persons unknown to the railroads in obtaining their orders for materials. New forms for advance commitments and for contracts covering general material and tools were also offered for adoption as standard and it was recommended that railroads should discontinue the practice of numbering invoices. The committee also presented a summary of methods, forms, etc., as adopted by the Association from time to time, together with the new forms suggested, with the recommendation that the collection be adopted as a book of rules for the purchasing department separate from the book of rules governing stores operation.

The committee report on purchasing records was supplemented by a special paper presented by A. H. Durboraw of the Pennsylvania, on the co-ordination of purchasing and stores office practices, in which he described a method by which this company dispensed with the making of new requisitions by the purchasing department for non-catalogued material ordered by the store department through the use of a combined requisition.

Stores Department Rules. In the pursuance of a course of action begun in past years, a report of further studies in formulating a stores department book of rules was made to the section, the committee chairman, T. J. Hege-man, (C. B. & Q.) presenting the report. The principal recommendation of the committee was the adoption of a loose leaf form of price book permitting the insertion of new prices without rewriting the descriptions. A new method of handling the transfer of material between stores was also offered as a means of dispensing with clerical work.

The discussion on the price book disclosed wide variation in practices on the railroads, as well as decided differences of opinion concerning methods. The Canadian National has discarded the pricing book system for bin cards, making the issuer of material in the store responsible for revising prices as they change. The Milwaukee has had a similar system for several years, but keeps master price records in general and district offices. The Southern Pacific favors prices, but disapproves of leaving the price posting to the stockmen, instead of price clerks, while the Southern recommends the use of this system only for the education of the storehouse men and consumers of material. Bin pricing has shown weaknesses on the Hocking Valley and the Canadian Pacific, where stock book pricing is used, the announcement of which, together with opposition from other roads, including the Burlington, to adopting the bin price system on the strength of the limited experience with it thus far, led to the adoption of the loose-leaf form recommended by the committee, which was considered a decided step in the

forward direction. After considerable controversy the form recommended by the committee for inventory was also adopted as standard, but with the recapitulation column omitted.

General Accounting. It was disclosed by the report of the Committee on General Accounting, of which H. H. Laughton (Sou.), was chairman, that the Railway Accounting Officers' Association declined to classify the changes customarily made under Materials and Supplies, in accordance with the standard classification of material recommended by the Section as was desired by the Section for use in making comparisons between roads.

Among other subjects was a special paper by O. A. Schultz of the Burlington, on the economical use and reclamation of second-hand lumber. By way of elaborating on the savings credited the Burlington in the report on forest products, he developed the history of this work on the Burlington and described the methods employed, the equipment used and the results obtained.

The subject of fuel conservation was brought before the section in a report of a committee working jointly with the operating and mechanical sections, in which it was disclosed that no decision had yet been reached in the proposed establishment of a central agency of fuel investigation and utilization. It was also announced that the proposal to adopt 160 gallons of fuel oil as the proper equivalent of a ton of coal for equating purposes in accounting work, failed through insufficient votes from the railroads.

The Proposed New Line Across Pennsylvania

WASHINGTON, D. C.

THE Interstate Commerce Commission has announced a hearing at Washington on June 22 before Director Mahaffie of its Bureau of Finance on the application filed by the New York, Pitts-

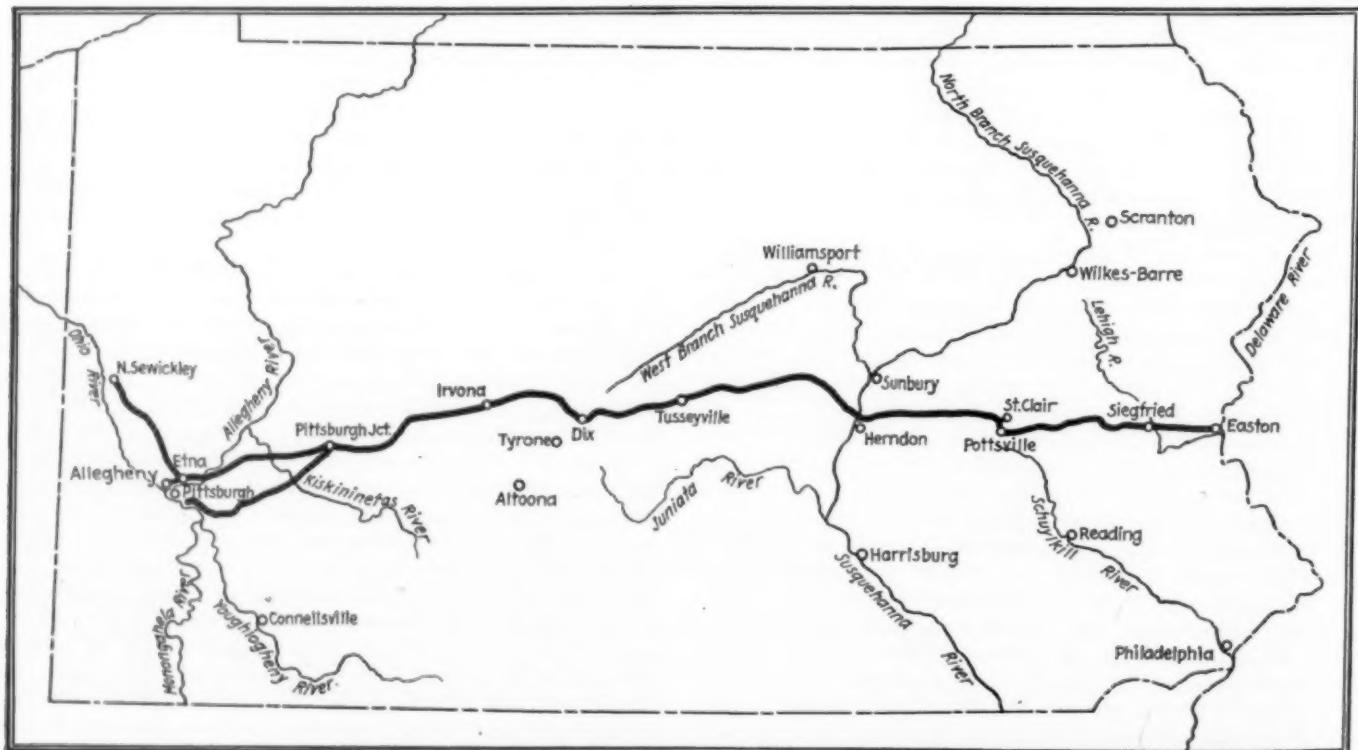
burgh & Chicago Railroad for a certificate of public convenience and necessity for the construction of a new double-track line across the state of Pennsylvania from Allegheny to Easton, Pa., 283 miles, with a branch from Allegheny City to North Sewickley, 31 miles, and another leaving the main line at Pittsburgh Junction (east of Pittsburgh) and extending into the industrial section of Pittsburgh, 30 miles. The line is proposed to be built under charters controlled by the estate of E. H. Harriman, which is represented in this matter by L. F. Loree, president of the Delaware & Hudson.

Much additional information regarding the plans of the company not revealed by the original application, which has been the cause of much speculation, has since been disclosed by the filing of a statement in reply to a questionnaire from the commission by F. A. Molitor of Pittsburgh, president of the new company. This states that construction is expected to begin on or about July, 1926, and that it is expected to complete the construction on or about July, 1930. Much of the preliminary engineering work incident to the location of the line has been done and the cost is estimated at \$182,387,157 for road, \$43,995,608 for equipment, and \$33,961,468 for general expenses, making a total of \$260,344,233, or \$757,145 a mile. Excluding equipment the cost is estimated at \$629,195 a mile.

A reconnaissance and study has also been made, according to the statement, of the possibilities of extending the line east to New York Harbor and west to Creston, Ohio.

The line is proposed for the purpose of handling through traffic moving between New York Harbor and points west of Pittsburgh and it is stated that no tonnage of freight from enterprises to be established along the proposed new line has been included in the estimates of prospective earnings.

The company's application stated that it had no relation at present, traffic or financial, to any other railroad. The reply to the questionnaire said that the sole control was in the Harriman estate, which had acquired the rights, properties and franchises by purchase. The company was



Route of the Proposed New York, Pittsburgh & Chicago

incorporated in Pennsylvania on January 9, 1925, as the successor of the New York, Pittsburgh & Chicago Railroad Corporation, the New York, Pittsburgh & Chicago Railway, the New York, Pittsburgh & Chicago Railroad and the New York, Pittsburgh & Chicago Air Line railroad, which was a merger of the Brush Creek & Crows Run, the Indiana, Clearfield & Eastern and the Allentown, Tamaqua & Ashland. The successive transfers were made at various dates at sheriff's sales, and it was stated that the studies and surveys relative to this line have been made at various times since 1905.

The new line, according to the company's statements to the commission, would reduce the distance between New York and Pittsburgh and provide a low-grade route for through traffic between New York Harbor and the West, thereby expediting the movement of traffic and reducing the delays and congestion that now exist. The line haul between Pittsburgh and New York would be reduced 80 miles as compared with that of the shortest route now existing and since all engine divisions between Pittsburgh and Easton would have the same ruling grades, 0.3 per cent against eastbound traffic and 0.4 per cent against westbound traffic, more expeditious handling of trains would result in economies. It is estimated that the use of the proposed line would reduce the cost of handling freight between Pittsburgh and New York by at least 25 per cent as compared with the shortest existing route.

Replies to the commission's questionnaires expressing opposition to the granting of the certificate applied for have been filed by the Pennsylvania, the Reading, the Delaware, Lackawanna & Western, the Lehigh Valley and the New York Central. The statement of the last company, which is in a general way similar to those of the other companies which have been previously mentioned in the *Railway Age*, says that low grades by this route could be assured only by enormous expenditure of capital and that the facilities needed can be provided at much less cost by utilization and unification of existing lines. The construction of a new line across Pennsylvania in an easterly and westerly direction is declared to be unnecessary at the present or in the proximate future and its construction "would involve an unwarranted expenditure of capital." Attention was called to the proposal made by the late A. H. Smith for the development of an additional trunk line through northern Pennsylvania utilizing the Catawissa branch of the Reading and the Central of New Jersey.

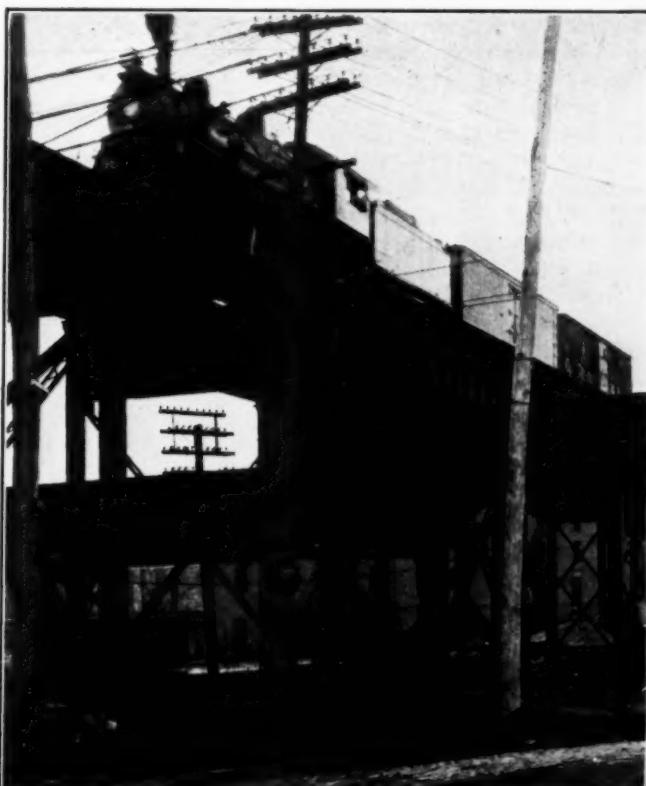
The route as outlined in the application is as follows: From Allegheny in an easterly direction through Millvale, Etna, Sharpsburg, Aspinwall, Claremont, Hoboken, Montrose, Verona, Oakmont, Millington, Markle, Apollo, West Lebanon, Parkwood, Indiana, Utah, Irvona, Chesterfield, Kendrick, Houtzdale, Dix Station, Boalsburg, Tusseyville, Coburn, Glen Iron and Kreamer, crossing the Susquehanna river about 2 miles north of Herndon, and continuing easterly through Dornseif, Gowen City, Helfenstein, Lavelle, Fountain Springs, Hecksherville, St. Clair (reached by a spur of 2 3/4 miles), Pottsville, Hecla, Kepner, Staudtsville, Jordan Valley, Newside, Neffs, Siegfried, Howertown to Easton, 283 miles. The Brush Creek & Crows Run branch would begin at Allegheny City on the main line and run in a northwesterly direction to North Sewickley, 31 miles. The Pittsburgh branch would leave the main line at Pittsburgh Junction, just east of Parkwood, and extend in a westerly direction into the industrial section of Pittsburgh, 30 miles.

It is stated that there is no agreement, tentative or otherwise, with existing carriers covering operation of the proposed line, interchange of traffic, division of rates, or trackage rights. It is proposed to issue \$600,000 of

stock in payment of the rights, properties and franchises of the predecessor company, and it is proposed to finance the construction by the issue and sale of stocks and bonds. Gross receipts are estimated at \$31,320,000 for the first year, increasing to \$52,640,000 after the fifth year, of which \$50,400,000 would be from freight traffic. Net railway operating income is estimated at \$7,830,000 for the first year and \$13,160,000 after the fifth year.

Preliminary surveys and projected locations have been made for several lines between Allegheny City and the Susquehanna river and a final location has been run in upon the ground, having the adopted ruling grade of 0.3 per cent against eastbound traffic and 0.4 per cent against westbound traffic. Maps, profiles and detailed estimates have been prepared for this portion of the line, 187 miles, based upon such final location. For the line between the Susquehanna river and Easton, preliminary surveys and various projections have been made and a final location run in for a line with grades in excess of those finally adopted. A projected location, based upon the lower ruling grades adopted, has been made for 96 miles, and a general map and profile prepared, together with an estimate of the cost of construction. Preliminary and final location surveys have been made for the two branches and maps, profiles and general estimates have been prepared for these lines. General construction specifications, maps, profiles and detailed estimates of the cost of construction were filed with the commission, which was asked to hold a hearing on the application.

TWENTY-EIGHT Southern Pacific enginemen who have been declared the winners in the fuel saving contest on the 11 oil-burning divisions during the month ending February 28, will be sent to the annual convention of the International Railway Fuel Association at Chicago, May 26-29, with all expenses paid.



Richmond, Va.—the C. & O. Is the Highest; Next Comes S. A. L.; with the Southern at the Surface Level

Burlington Shows Increased Net Income

Comparisons of different parts of system show contrast between Northwest and Southwest

THE Chicago, Burlington & Quincy reported for 1924 a net corporate income available for dividends of \$21,899,829, equivalent to \$12.81 a share on the \$170,839,100 capital stock. This net income compared with \$19,290,529 in 1923, equivalent to \$11.28 a share. The Burlington did less business in 1924 than in 1923 and made up for decreased gross earnings by substantially decreasing net operating expenses. Its net corporate income, although greater than in 1923, was considerably less than in each of the years from 1916 to 1921.

The Chicago, Burlington & Quincy operates a total of 9,397 miles of line, serving 11 states and extending from Chicago to Denver. In addition, it controls the Colorado & Southern by having possession of about three-quarters of the latter's common stock and not quite one-half of its combined outstanding first and second preferred issues. The Colorado & Southern operates 1,785 miles and with its subsidiaries extends in a northwestern-southeasterly direction through Denver to Fort Worth, Tex., thereby adding three more states to the eleven served by the Burlington itself. This brief resume shows how widespread the Burlington is.

Extent of System

The Burlington is included in the central western region but it partakes very largely of the characteristics of the northwestern region. The Colorado & Southern, however, reaches into the southwest and has benefited to

less of a granger road. In 1924, its revenue tons were divided as follows: Products of agriculture, 22 per cent; animals and products, 7 per cent; products of mines, 41 per cent; products of forests, 5 per cent; manufactures and miscellaneous, 20 per cent, and merchandise or l.c.l., 4 per cent. Bituminous coal, included under products of mines, made up 30 per cent of the total revenue tonnage. About three-quarters of the total traffic is originated on the Burlington's own rails. It has the important function, however, of being the Chicago connections of the Great Northern and the Northern Pacific by means of its line from St. Paul to Chicago and its two lines from Billings, Mont.

In 1924, the Burlington had a somewhat peculiar condition of circumstances. Its revenue tons were 1.62 per cent less than in 1923 and less also than in 1917, 1918 and 1920. Its revenue ton miles were 3.17 per cent less than in 1923 and less also than in the other three years just mentioned. For the early part of the year the road's traffic suffered from the depression in the agricultural areas which particularly restricted the movement of manufactured products. In the fall of the year the conditions were reversed because of the marketing of a large crop sold at high prices which effected a marked increase in the buying power of the agricultural areas. Conditions averaged out in such a way that tonnage originating on the system increased 1.6 per cent in 1924 over 1923 but the tonnage received from connection decreased

CHICAGO, BURLINGTON & QUINCY OPERATING RESULTS, 1914 TO 1924

Year ended June 30	Mileage	Revenue tons	Revenue ton-miles	Aver- age haul	Revenue per ton mile, cents	Revenue train load	Revenue car load	Total operating revenues	Total operating expenses	Net operating revenue	Operating ratio	Net after charges
1914.....	9,264	32,388,800	8,612,630,000	266	0.729	479	19.08	\$93,687,141	\$63,224,853	\$30,462,288	67.49	\$18,807,202
1915.....	9,366	31,758,791	8,527,444,000	269	0.733	492	19.23	91,125,061	60,441,367	30,683,694	66.33	19,041,919
1916.....	9,369	36,640,658	10,087,484,000	275	0.710	558	20.20	102,358,893	61,713,161	40,645,732	60.29	29,846,270
Year ended Dec. 31												
1916.....	9,373	39,278,135	10,923,326,000	278	0.708	575	20.53	109,191,204	65,235,705	43,955,500	59.74	32,994,726
1917.....	9,373	45,364,552	13,143,186,000	290	0.662	629	23.37	122,342,707	78,632,344	43,710,363	64.27	29,406,032
1918.....	9,373	47,264,416	14,162,605,000	300	0.738	669	25.78	144,172,769	112,067,616	32,105,153	77.73	22,792,500
1919.....	9,372	40,235,427	11,952,721,000	297	0.895	621	22.60	154,011,438	120,492,962	33,518,478	78.24	23,542,471
1920.....	9,390	47,233,256	14,130,364,000	299	0.932	661	24.86	185,270,768	164,017,388	21,253,380	88.52	22,924,364
1921.....	9,364	36,116,089	10,554,788,000	292	1.163	591	23.54	168,712,268	128,216,290	40,495,978	76.00	25,609,973
1922.....	9,364	39,176,051	11,754,596,000	300	1.033	629	23.69	164,916,471	126,777,703	38,138,767	76.87	20,261,488
1923.....	9,401	43,483,603	12,690,384,000	292	0.996	612	22.88	171,270,661	134,290,379	36,980,282	78.41	19,290,529
1924.....	9,407	42,778,294	12,287,748,000	287	0.975	648	23.61	162,674,878	119,958,734	42,716,144	73.74	21,899,829

some extent at least—and this is particularly true of its Texas subsidiary, the Fort Worth & Denver City—from the prosperity which has of late years ruled in that territory. It is of particular interest in this connection that the Colorado & Southern lines are now going through a period of expansion. Thus, only this week it has received authority from the Interstate Commerce Commission to effect an entrance into Dallas by means of trackage rights over the Rock Island and it now has before the Interstate Commerce Commission an application for authority to build, through a subsidiary—the Fort Worth & Denver South Plains—183 miles of line, which will reach the growing agricultural area in western Texas adjacent to Lubbock.

Traffic

The Burlington has a fairly diversified traffic although not sufficiently diversified to keep it from being more or

8.8 per cent. The tonnage of farm products handled was 8.31 per cent in excess of the previous year and was the largest in the history of the railroad.

It was noted above that of the Burlington's total tonnage about 30 per cent was bituminous coal. The Burlington receives the larger part of its coal from mines in Illinois which have been particularly hurt by the Jacksonville wage agreement. In 1924, as compared with 1923, the production of bituminous coal in Illinois decreased 14.4 per cent but in some manner the Burlington was favored to such an extent that the tonnage it handled from that territory decreased only 1.5 per cent and its total coal tonnage showed a reduction of but 7.42 per cent.

Results in 1924

The Burlington's total operating revenues in 1924 were \$162,674,878 as compared with \$171,270,661 in 1923,

a decrease of \$8,595,783 or 5.02 per cent. As against this there was a decrease of \$14,331,644 or 10.67 per cent in total operating expenses. In 1924, operating expenses totaled \$119,958,734 as compared with \$134,290,379 for 1923. This decrease was made up as follows: Maintenance of way, \$2,570,640 or 11½ per cent; maintenance of equipment, \$5,868,166 or 14½ per cent; and transportation, \$5,585,551 or 9 per cent. The decrease in maintenance of equipment was practically entirely in the form of decreased expenses for repairs of locomotives and freight cars, and was explained by the fact that these expenses were high in 1923 due to the catching up of work deferred on account of the railway shop strike of 1922. In 1923 also, the Burlington charged large sums for an extensive program of freight car rebuilding.

and in 1923 of \$25,365,567, the former being 13 per cent in excess of the latter. However, the 1923 net operating income was equivalent to but 4.3 per cent of the total property investment including cash and materials and supplies which indicates that the Burlington is not quite so well off as its 10 per cent dividends might indicate. Furthermore, this 4.3 per cent return was actually less than the return reported by the roads in the central western region as a whole for 1923, for in that year the rate of return for the district as a whole was 4.5 per cent. In 1924, the Burlington so decreased its operating expenses as to effect a higher return on its investment. Its 1924 net operating income was equivalent to 4.8 per cent on its operating investment which compared with the rate of return for the region for that year of 4.21 per cent. It has been stated that the Burlington partakes very largely of the characteristics of the northwestern region. In 1923 the rate of return in the northwestern region was 3.45 per cent; in 1924, 3.12 per cent and for the entire western district in 1923, 3.96 per cent and in 1924, 3.87 per cent.

Trend of Earnings

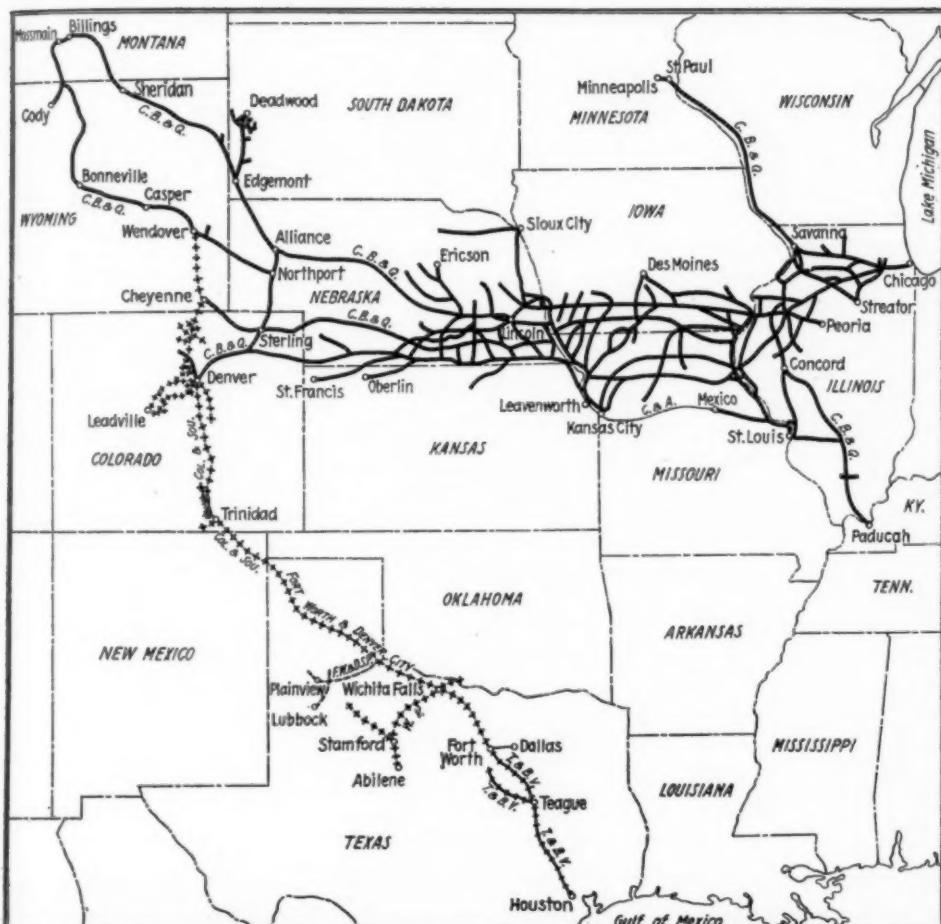
It is interesting to make comparison between the Burlington's position now and its position prior to the war. The best index of pre-war net earnings is the standard return from net operations during federal control. The Burlington's standard return was \$33,390,080. The 1923 net operating income was equivalent to 76 per cent of that figure and the 1924 net operating income equivalent to 86 per cent. Even prior to the war the Burlington was noted for its continuing prosperity with a level of earnings per ton-mile which was considerably less than that of its neighbors. Thus, in the fiscal year ended June 30, 1916, the Burlington received 0.710 cents per ton-mile, whereas the average rate at that time on the St. Paul, the North Western, the Union Pacific, the Santa Fe, the Rock Island and the Missouri Pacific was 0.861 cents.

In the case of transportation expenses, about half the decrease was due to saving in fuel. This was reduced in amount to the extent of \$2,869,170 or 17.98 per cent, although the decrease in the average price of coal purchased was only 6.40 per cent and the decrease in total train miles was 4.73 per cent.

The Burlington pays 10 per cent on its capital stock, all of which dividends accrue to its owner companies, the Great Northern and the Northern Pacific, and assist them to carry their investment in Burlington stock. The 10 per cent dividends totaled \$17,083,765 in 1924. There was a balance after dividends in 1924 of \$4,522,133, and in 1923 of \$1,917,385. Although it is true that the Burlington succeeded in paying 10 per cent dividends on its stock, this does not mean that the Burlington today is an overly prosperous carrier. Thus, in 1924 the Burlington had a net railway operating income of \$28,742,112

as compared with \$33,390,080 in 1916. The Burlington's earnings per ton-mile of 0.708 cents compared with 0.836 for the western region as a whole. The Burlington's earnings per ton-mile in 1924 were 0.975 cents as compared with the average for the western region in that year of 1.209 cents. Whereas the earnings per ton-mile in the western region as a whole in 1924 were 45 per cent in excess of those in 1916, the increase in the case of the Burlington was but 38 per cent. In other words, not only are the Burlington's earnings per ton-mile less than those for the western district as a whole at the present time, but they also show a smaller increase than does the rest of the region in 1924 as compared with 1916.

The story is completed by reference to the brief recently filed by the western carriers in connection with the Hoch Smith resolution. This showed that the earn-



The Chicago, Burlington & Quincy and Controlled Lines

ings per ton-mile in that district have increased less than for other districts or for the country as a whole. The facts are that in 1924 as compared with 1916 the ton-mile earnings in the United States as a whole were 58 per cent greater; in the eastern district, 74 per cent greater; in the western district, 45 per cent greater and now in the case of the Burlington, 38 per cent greater.

COMPARISON OF NET EARNINGS AND RELATIVE POSITION OF LINES IN THE BURLINGTON SYSTEM

	Standard return	Net railway operating income, 1924	Per cent
Chicago, Burlington & Quincy....	\$33,390,080	\$28,742,112	86
Colorado & Southern.....	2,481,212	1,779,941	72
Fort Worth & Denver City.....	1,891,386	3,832,662	203
Wichita Valley Lines.....	352,367	608,161	173
Colorado & Southern System...	\$4,724,965	\$6,220,763	132

With reference to the revenue ton-miles, it should be noted that in the western district as a whole, (averaging the increased prosperity of the southwestern region with the depression in the northwestern region) there was an increase of 10 per cent in 1924 as compared with 1916. In the case of the Burlington there was an increase of about 11 per cent. These facts prove that the situation with reference to the Burlington is very much the same as that which applies to the western district as a whole and that the arguments that apply to the adverse conditions pointed out in the brief of the western carriers apply just as much to the Burlington. Of course, the basic factor behind these conditions is evident. Prior to the war the Burlington was far from being an average road as compared with other carriers in the western district. As a matter of fact, the case of the Burlington in former years was one of the leading arguments that was always brought out in the discussions that finally led to such a step as the adoption of the recapture clause.

Colorado & Southern

The Colorado & Southern in 1924 had a very prosperous year. It reported for the system (including the Colorado & Southern itself and the Fort Worth & Denver City and the Wichita Valley, all the stock of each of which it owns), a net corporate income available for dividends of \$4,055,971, as compared with \$1,924,546 in 1923 and \$1,737,276 in 1922. This, in fact, was one of the best years in the company's history. The road handled 7.81 per cent more revenue in 1924 than in 1923,

10.15 per cent more revenue ton-miles. Its operating revenues were 8.74 per cent greater but its operating expenses were 4.97 per cent less. The decrease in expenses was principally in the maintenance accounts and is explained by the fact that these expenses in 1923 were high in the case of equipment due to catching up on the shop strike, and in the case of maintenance of way due to the flood conditions prevailing in that year. It is true that the Colorado & Southern lines lost much traffic on account of the floods, but it is true also that the territory which it serves was much more prosperous in 1924 than in the preceding year. The revenue ton-miles were not as great as in 1918, 1919 or 1920.

Fort Worth & Denver City Particularly Prosperous

It was noted above that the Burlington in 1924 had a net railway operating income equivalent to 86 per cent of its standard return. In the case of the Colorado & Southern System, the 1924 net railway operating income was equivalent to 132 per cent of the standard return. The net railway operating income in 1924 was \$6,220,763 as compared with \$4,065,274 in 1923 and with a standard return of \$4,724,965. The Fort Worth & Denver City, which is that part of the Colorado & Southern lines actually reaching nearest the Southwest, was particularly prosperous. Its net railway operating income in 1923 was \$3,832,000 as compared with \$2,877,039 in 1923 and with a standard return during federal control of \$1,891,386. The 1924 net operating income was no less than 203 per cent of the standard return. In 1923, the Fort Worth & Denver City's net operating income was equivalent to no less than 8.6 per cent of its property investment, inclusive of materials and supplies and cash. The rate of return in 1924 was about 10 per cent. This explains readily enough why it is that the present expansion of the Burlington is taking place in western Texas. It is, of course, unfortunate that this favorable situation does not have a greater influence on the affairs of the Burlington. The Fort Worth & Denver City is but a part of the Colorado & Southern Lines and even they but a small part of the greater system. The amount of benefits that accrue to the Burlington itself are indicated by the fact that the Colorado & Southern dividends in 1924 were \$680,311 of which only a portion accrued to the parent company. There was a balance after dividends of no less than \$3,375,660.



A Fast Freight Train in Hungary

The Follies of 1925

An analysis and criticism of the Administration and Congressional attitude towards railroads

By Marcus L. Bell,

Vice-President and General Counsel, Chicago, Rock Island & Pacific

IT is only within the last few years that the public has conceived of the railroad in terms of the service which it renders, or has realized that the transportation which it has to sell is an essential commodity. Not until five years ago did the law recognize that the important thing about the railroad business was the production of adequate service and not the cost of that service. * * * Of course, it is a crisis which confronts us. I don't remember a time when the railroads were not facing a crisis—sometimes two or three crises at once. But this one is a little more critical, and a little less justifiable, and its proposals a little more radical, than any we have faced. * * * The changes in this changing world are swifter than a weaver's shuttle—so swift that we are prone to forget how rapid they are. Only today, as it were, has the wagon with solid wheels, such as belonged to Abram when he led his tribe out of Ur of the Chaldees, become obsolete. This illustrates that more progress in transportation has been made by our railroads in their brief existence than in all the years prior to their coming. One of the common sights of the East is an unused canal sometimes paralleling the railroad. When Charles Dickens visited America, these canals were actually used for passenger transportation, as well as for the modest freight service of that day. As a boy I traveled by the palatial river steamboat. The last good steamer disappeared from that river some 30 years ago. It needs slight argument in this company to show the inroads that the automobile has made in our passenger traffic. In 1915 the Rock Island carried 19,350,000 passengers; in 1924 it carried 16,284,000. * * * We may as well face the fact that a change has come over passenger transportation which we must reckon with, or go out of the business. I say a change, but it is only the beginning of a change; because it is only within the last two or three years that the motor bus has reached such a point of mechanical efficiency and comfort that its service could be considered a permanent attraction. The change in freight transportation also has come to stay. Many modern factories in New England have no rail connection.

But it is not with respect to its physical development that the transportation industry presents a problem. The intelligence and energy which have produced our wonderful railroad system are fully competent to deal with all the physical problems as they arise. The great danger is in unwise legislative interference with the machinery. * * * I have no quarrel with police regulation. That began in the early days. As to bells on locomotives, warning boards at crossings, air brakes on all cars, automatic couplings, and things of that sort intended for the protection of the public and the employees, no railroad man has any cause for grievance against the principle of such regulation, although frequently there were causes for annoyance at the fantastic applications. The trouble in regulation began when the law first laid its hand upon the economic phases of transportation. When, in 1906, the regulation of freight rates became a policy of our govern-

ment, the rate schedules were not the product of a single mind or group of minds; they represented a growth, a long slow growth, with changes here and there as conditions changed; of negotiations between competing carriers and competing shippers, of give and take, of struggle and compromise; and it was upon the rate schedule as thus made that the industrial development of the country was founded. But from 1906, on till federal control, life for the carriers was one long series of blundering attempts at fiscal regulation, which finally landed them in the chaos of federal operation. Not all of the reductions were blunders; some were vindictive attempts of politicians to make capital by smiting the readiest victim: but in the main the fixing of rates was a groping for a remedy by a physician who was not sure of the disease and still less sure of the way to cure it. The great majority of the cases before the commission involved complaints of discrimination between competing producers or competing markets or competing consumers. The easiest way to cure such a complaint was by reducing the rates complained of, regardless of the effect. The long and short haul clause always has been, in popular parlance, a monkey wrench thrown into the machinery by people who did not understand. Little by little the carriers assisted in the development of a body of judicial decisions establishing that they, like other industries engaged in the public service, were entitled to earn a fair return upon the value of their property. The railroad baiters, when this began to be understood, decided to reduce the value of the carriers' property; so the Valuation Act was passed. After twelve years it has cost the country over \$75,000,000, and the work which it authorized has scarcely begun. When it was found that the valuations would not afford a justification for further reductions in rates, the sponsors of valuation changed their base entirely, and advocated the repeal of Section 15a of the Transportation Act. Not only have the railroads had to fight for a fair interpretation of the Valuation Act, but in many cases have had to meet hostile state and federal agents who instead of conducting an impartial and diligent search after facts, have done their best, or worst, to destroy the property values. * * * I mention valuation here only in further illustration of what I have said about the physician groping for his remedy for an undiagnosed disease. Valuation was hailed as a necessity, a ready means of reducing rates by showing the over-capitalization of the roads. We recognize it now as an interesting study, but the patient would have died several times over if the country had needed any relief dependent on the Valuation Act.

The First Constructive Law

The Transportation Act was a constructive attempt, and the first constructive attempt, to handle the railroad situation intelligently. It recognized the constitutional limitations of the rate making power, and recognized the necessity of protecting the public by treating the transportation machine as a whole for each section of the country and preventing the stronger roads from putting the weaker roads out of business. It is in the administration

*Abstract of address delivered at the annual dinner of the Western Railway Club at Chicago on May 22.

of the Transportation Act that it has fallen down. When rates are so fixed that the carriers in the Middle West earn only 4 per cent on their investment, while they must pay 5½ per cent and 6 per cent upon the money which they must put into capital expenditures, the answer is easy and not far off. It is only a question of how long the process can continue. I believe the Interstate Commerce Commission fully appreciates this problem, but I am quite sure Congress as a body has no conception of it and that the two remedies now thrust forward for public consideration for the relief of the transportation situation are simply additional instances of groping after remedies and are fraught with grave dangers for the carriers and, therefore, for the country.

I refer to the Hoch-Smith resolution and the agitation for a compulsory consolidation measure. Of the two I believe compulsory consolidation is the less dangerous, because its advocates are sincere in their belief that, in some manner not disclosed, or variously disclosed by various adherents of the measure, it will do something, whatever it may be, to allay the complaints of hard times in some sections of the country. This is the real basis upon which compulsory consolidation is offered to the country. Two measures were introduced into the last Congress requiring compulsory consolidation, and these measures, or some form thereof, will probably be put forward in the next Congress.

Because consolidation is a popular cry, it does not follow that it is a wise measure. Every time the law has touched the economic life of the people it has brought about consequences different from those expected and generally disastrous. Witness the Oklahoma Bank Guaranty Law, the Kansas Industrial Court, the South Dakota Banking Law and the regulation of railway rates. Unless the economic forces that control this country's development can have free play, some disaster follows. I believe in consolidation. But to require all the companies in the United States to consolidate themselves into a group of systems; to compel companies which have been well organized to turn their properties over to a new company of untried merit, to compel the strong railroads to bear the burden of the weak, would be a breach of faith; un-American. If such a thing is done it will bring in its train more disaster than federal control.

Vicious Features of Consolidation Proposal

What makes compulsory consolidation imperative? It is said that consolidation will increase efficiency of operation. This is a very poor ground for advocating such a radical change. There is nothing in the mere matter of consolidations that could improve the railroad service of the last two years. * * * I should like to see some one who really can demonstrate how the overhead will be reduced by grouping the efficient and the inefficient. If this will have any effect on the overhead, it will be to increase it. It is doubtful whether any one man or group of men can operate one railroad system of 30,000 miles as well as the same individuals could operate four or five smaller systems of the same aggregate mileage.

It is suggested that enforced consolidation will effect large economies through the elimination of duplicate service, the reduction of empty car miles, and a more intensive use of equipment; but if competition is to be preserved, we shall continue to have the same or more service from the consolidated companies than we now have.

Secretary Hoover in a statement before the House Committee on April 9, 1924, said that "an overhauling of the rate structure would be much more easily accomplished after consolidation of the railroads and a larger diversification of traffic on the roads." This is a surprising statement, and as a reason for compulsory consolida-

tion it is a specious argument, and only begs the question. In plainer language it means that under the present system the rates on agricultural products cannot be fixed so low that the Chicago & North Western, for example, would be crippled, because that road could come into court and enjoin such rates as confiscatory. To get around this obstacle, the people who wish to do the farmer good would combine the North Western with some other system composed of roads where the agricultural traffic is unimportant: so that the merry business of reducing rates on farm products could go on undisturbed, the bills being met from the exchequer of the combined system. Such a process of reasoning assumes that it would be possible to consolidate the granger roads with other non-granger roads of such financial strength as to endure the pruning process on agricultural rates. It does not explain how a compulsory consolidation which takes in the poor roads as well as the rich ones will be able under any rate adjustment to stand such a process. And the real objection to it is that it expects the shipper of other kinds of freight to pay part of the cost of carrying the farmers' freight. Either that, or the loss must be met from the public treasury, which means we must all pay it.

The Hoch-Smith resolution I believe to be even more dangerous than a compulsory consolidation act. It is more dangerous because the danger in it is insidious and indirect.

This country is very fortunate in having at its head such an able, sound and conservative man as President Coolidge; but even he, in his early days in office, was misled by unwise counsel. In his address to Congress of December 6, 1923, he said that "Consolidation appears to be the only feasible method for the maintenance of an adequate system of transportation with an opportunity so to adjust freight rates as to meet such temporary conditions as now prevail in some agricultural sections. Competent authorities agree that an entire reorganization of the rate structure for freight is necessary. * * *" The President has not named the "competent authorities" who gave him this information. This language has been used as a text ever since, and the House and the Senate have been told again and again that "competent authorities" agree that a reorganization of the rate structure is necessary; but the "competent authorities" have not been identified, nor has anyone quoted the reasons for the necessity which is attributed to their judgment.

True, it has been urged that the horizontal increase in rates made in *Ex parte 74* and the horizontal reductions in rates made in some classes of traffic in 1921 and 1922 have thrown the rate schedule out of adjustment; but to urge that these maladjustments, so-called, necessitate an entire revision of the rate structure ignores the fact that under the existing laws there is ample and adequate machinery for the correction of an adjustment which the exigencies controlling the commission in its rate increases and rate reductions have brought about. * * * Commissioner Esch on April 3, 1924, when he testified before the House Committee, said: "We find little in the percentage increases which have been made to indicate the necessity of shifting the level of rates on 'basic' commodities as compared with other rates, and * * * there is no reason to believe that a general readjustment is needed today. * * * The existing rate situation, built up as a result of commercial and transportation conditions and based upon the best judgment of the carriers and the commission, on the whole fairly well meets the needs of commerce. * * * "

But the President's statement has been the text upon which the Hoch-Smith resolution was based. I do not agree with those who consider that the resolution is a harmless measure, or that it is merely an application of

existing law directing the commission to do what it would have to do anyway in cases now pending. We must bear in mind that the resolution is part of the law of the land, "to be applied in every case which may fall within the terms of the resolution, or be affected thereby, whether adversely or beneficially."

It is true that the resolution is very carefully worded and that the declaration of policy and the directions to the commission are hedged about with references to the existing law. For instance, in directing the commission to consider the conditions prevailing in the several industries at any given time, the resolution contains the careful limitation "in so far as it is legally possible to do so." Likewise in directing the commission to make such changes in the rate structure as will promote the freedom of movement of the products of agriculture, now said to be under a depression, the changes are limited by the use of the word "lawful." In view of the fact that the carriers are now earning only 4 per cent on their investment, when under the Transportation Act they should be earning 5 1/4 per cent, it follows that, if traffic conditions remain unchanged, the commission, in making any "lawful" changes which it may make under this resolution, must revise the rates upward. If there are inequalities sufficient to warrant correction in its general investigation, the inequalities must be removed by a process of raising rates instead of lowering them, as formerly; otherwise the commission would be departing from the duty strictly enjoined upon it to "initiate, modify, establish or adjust such rates" that the carriers may earn a fair return. Since the carriers have never earned a fair return under the Transportation Act, it is probable, from a legal standpoint, that the commission is without power further to reduce rates either in this investigation, Docket No. 17,000, or in any other investigation. Considered in this light and under the present circumstances, the investigation which the commission is conducting in Docket No. 17,000, in conformity with the mandate of the Hoch-Smith resolution, is not in itself a dangerous thing, although it will cost a lot of time and money that might be better devoted to other uses; and as Commissioner Esch has pointed out, its results could be obtained and would be obtained in the ordinary routine of pending cases before the commission.

But the vice and the danger of the Hoch-Smith resolution is that it goes much further than this. What is going to happen to the carriers when, in some happy day, by dint of persistent effort and constant vigilance or through the grace of a revised rate schedule, they do succeed in earning a fair return upon their investment? What will happen when, no longer protected by their poverty, their revenues may be left at the mercy of the commission, when pursuant to the declaration of policy in this resolution, it attempts to adjust freight rates to the end that "commodities may freely move"? What will happen when the commission, unrestrained and likewise unprotected by the constitutional guaranty of a fair return, must weigh and determine the conflicting claims of shippers of a thousand commodities who believe that their commodities do not move "freely" enough?

I think that this policy is the most dangerous regulation that was ever put upon the books, because it carries the transportation system and the rate fabric of the country into the realm of legislation for special interests. We have had two attempts in the last Congress to regulate rates for the benefit of some particular classes.

By the time a 10 per cent reduction in freight rates had been applied to all the farmer shipped and the burden of the reduction had been redistributed to the things the farmer buys, coal and lumber and so on, the farmer would be worse off than before; and the

very process would lead to new "depressions" in new lines of business. Every man whose rates were increased would be heard from.

The advocates of this resolution will say, "What difference does it make to the carriers, so long as they are protected in their fair return, how the rates are adjusted? If the carriers are combined in large systems." Abraham said to his son, "God will provide himself a lamb for the burnt offering." The people who are listening to the voice of their constituents on the farms and leading us up to a high mountain to make a sacrifice to their gods, may well expect the railroad men to inquire "Where is the lamb?" We can appreciate Isaac's misgivings as to how the lamb would be provided: and our experience leads us to expect that the sacrifice will be in deadly earnest.

But this is dangerous to us in a larger sense. It is dangerous to us as American citizens. It places a free, untrammeled and independent Interstate Commerce Commission under pressure from every special interest that conceives its commodity is not moving freely. We were about to sink, and the Transportation Act kept our heads above the water. The country for the first time realized that an adequate transportation machine was really the foundation of prosperity, and we saw the daylight breaking. This Hoch-Smith resolution throws it all to the winds. It takes the delicate rate fabric, the result of a long and slow growth, and subjects it to the strain of a thousand conflicting interests. The log-rolling, which is so familiar in connection with tariff legislation, is as child's play compared to the scramble and fracas that will result from this change of policy in rate making. We are going to overturn, if the resolution be followed, all that we have accomplished, and throw the railroads back into politics by direct command of law. The worst sufferers will be the people who now are supposed to be in need of help, the farming industry.

It is easy enough to criticize, but it is not easy to offer constructive suggestions. The most obvious necessity in the way of legislation is to repeal the Hoch-Smith resolution; and after that, to let us alone. There are laws enough on the books to protect the public in every detail of rail transportation. The Commission is aware of its responsibilities and endeavoring conscientiously to discharge them. It knows the problems that confront the carriers, and knows how to give prompt relief in the case of unsatisfactory rate adjustment. If the transportation system is allowed to go on under its present plan for say ten years, the Congressman who attempts to make political capital out of baiting the railroads will get the same laugh that will greet the man who opposes the teaching of evolution or advocates the belief that the world is flat.

For ourselves the best suggestion I can make is to tell it to the world. I have great faith that the people of this country will decide a question rightly when that question is understood. The people who must do the telling are those who are engaged in the transportation industry. You people here tonight have a duty to spread the elementary truths that I have talked about. The Western railroads have done some splendid publicity work in the last few years, and I believe it has repaid them many fold; and it has been of great benefit to the public. The people who ask their representatives in Congress for this gold brick are acting in good faith; they must be enlightened.

You have a remarkable calling. It requires ability and, above all, character of a very high order. No dishonest man can stay in the railroad business. The best remedy I can offer in the present menacing situation is for every railroad man in the United States to go out to his neighbors and preach the gospel of sound transportation economics.

Railway Capitalization and Income for 1924

WASHINGTON, D. C.

TOTAL capitalization of the Class I railroads of the United States on December 31, 1924, was \$18,708,611,029, not including switching and terminal companies, according to a preliminary compilation of special reports issued by the Interstate Commerce Commission, containing selected items of capitalization and income. The compilation gives the figures for the United States as a whole, by districts and regions, and by individual roads. The publication is primarily for the purpose of furnishing figures of certain income and balance sheet items frequently called for and not appearing in the monthly reports of revenues and expenses. Without this separate report such information would not be available until the filing of the annual reports. The totals differ somewhat from the corresponding figures in the December issue of the monthly summary of revenues and expenses of Class I steam railways. This is explained almost entirely by the fact that the statement includes

figures for roads in operation during the entire year, while the monthly summary includes data for the Arizona Eastern and the El Paso & Southwestern, which were leased to the Southern Pacific before December 31.

The recapitulation for the Class I roads, not including switching and terminal companies, for the United States and the Eastern, Southern and Western districts, is as given in the table below.

THE UNIVERSAL PORTLAND CEMENT COMPANY reports that all of its mills, located in various sections of the country, were operated during April without having a single employee lose any time on account of accident. Thousands of workers were employed, manufacturing over five million sacks of cement. The cement industry, in common with many others, is decidedly hazardous unless constant care is exercised by both company and employees. The rotary kilns are heated to a temperature of 3,000 degrees and the powerful crushers grind rocks to a powder fine enough to go through a sieve that will hold water. The forces include many nationalities and languages, making group instruction difficult, but the use of modern industrial safeguards and the constant safety education that has been conducted for 25 years have resulted in this 100 per cent record.

Item	United States	Eastern District	Southern District	Western District
1 Miles of road owned (single track).....	185,100.79	37,089.90	35,780.08	112,230.81
2 Average miles of road operated*.....	234,268.83	59,107.62	43,800.05	131,361.16
3 Common stock.....	\$5,849,918,503	\$2,253,085,129	\$952,447,317	\$2,644,386,057
4 Preferred stock.....	1,743,068,531	515,153,075	199,276,730	1,028,638,726
5 Total capital stock.....	7,592,987,034	2,768,238,204	1,151,724,047	3,673,024,783
6 Funded debt unmatured.....	10,708,526,147	4,098,484,679	1,887,728,451	4,722,313,017
7 Other long-term debt.....	407,097,848	76,923,795	14,387,007	315,787,046
8 Total long-term debt.....	11,115,623,995	4,175,408,474	1,902,115,458	5,038,100,063
9 Grand total capitalization.....	18,708,611,029	6,943,646,678	3,053,839,505	8,711,124,846
10 Railway operating revenues.....	5,908,010,370	2,665,770,834	1,024,517,352	2,217,722,184
11 Total maintenance expenses.....	2,048,128,153	924,494,528	364,843,436	758,790,189
12 Railway operating expenses.....	4,498,312,146	2,068,755,993	767,633,858	1,661,922,295
13 Railway tax accruals.....	339,293,197	135,982,458	59,068,797	144,241,942
14 Railway operating income.....	1,068,094,524	460,110,278	197,337,015	410,647,231
15 Equipment and joint facility rents.....	d 96,593,782	d 52,670,664	d 2,366,268	d 41,556,850
16 Net railway operating income.....	971,500,742	407,439,614	194,970,747	369,090,381
17 Other income.....	263,902,437	122,769,359	30,107,629	111,025,449
18 Total income.....	1,235,403,179	530,208,973	225,078,376	480,115,830
19 Rent for leased roads.....	141,150,548	88,122,095	9,458,370	43,570,083
20 Interest on funded debt.....	498,549,150	190,867,640	89,118,943	218,562,567
21 Interest on unfunded debt.....	11,596,517	5,491,367	1,181,929	4,923,221
22 Total interest accrued.....	510,145,667	196,359,007	90,300,872	223,485,788
23 Other deductions.....	22,304,497	15,608,158	2,668,897	4,027,442
24 Total deductions.....	673,600,712	300,089,260	102,428,139	271,083,313
25 Net income.....	561,802,467	230,119,713	122,650,237	209,032,517
26 Dividend appropriation of income and surplus.....	310,221,064	118,709,067	48,135,426	143,376,571
27 Total appropriations of income.....	220,037,190	100,556,842	8,888,782	110,591,566
28 Income balance transferred to profit and loss.....	341,765,277	129,562,871	113,761,455	98,440,951
Ratios of Items				
Per cent of Grand Total Capitalization: (Item 9)				
3 Common stock (3 to 9).....	31.3	32.5	31.2	30.4
4 Preferred stock (4 to 9).....	9.3	7.4	6.5	11.8
5 Total capital stock (5 to 9).....	40.6	39.9	37.7	42.2
6 Funded debt unmatured (6 to 9).....	57.2	59.0	61.8	54.2
7 Other long-term debt (7 to 9).....	2.2	1.1	0.5	3.6
8 Total long-term debt (8 to 9).....	59.4	60.1	62.3	57.8
Per cent of Railway Operating Revenues: (Item 10)				
11 Total maintenance expenses (11 to 10).....	34.7	34.7	35.6	34.2
12 Railway operating expenses (12 to 10).....	76.1	77.6	74.9	74.9
13 Railway tax accruals (13 to 10).....	5.7	5.1	5.8	6.5
14 Railway operating income (14 to 10).....	18.1	17.3	19.3	18.5
15 Equipment and joint facility rents (15 to 10).....	...	...	...	...
16 Net railway operating income (16 to 10).....	16.4	15.3	19.0	16.6
Per cent of Total Income: (Item 18)				
17 Other income (17 to 18).....	21.4	23.2	13.4	23.1
19 Rent for leased roads (19 to 18).....	11.4	16.6	4.2	9.1
20 Interest on funded debt (20 to 18).....	40.4	36.0	39.6	45.5
21 Interest on unfunded debt (21 to 18).....	0.9	1.0	0.5	1.0
22 Total interest accrued (22 to 18).....	41.3	37.0	40.1	46.5
23 Other deductions (23 to 18).....	1.8	3.0	1.2	0.9
24 Total deductions (24 to 18).....	54.5	56.6	45.5	56.5
25 Net income (25 to 18).....	45.5	43.4	54.5	43.5
Per cent of Net Income: (Item 25)				
27 Total appropriations of income (27 to 25).....	39.2	43.7	7.2	52.9
28 Income balance transferred to profit and loss (28 to 25).....	60.8	56.3	92.8	47.1

*--Including trackage rights. d--Deficit or other reverse item.

General News Department

The Interstate Commerce Commission has denied a petition filed by the Illinois Central on May 9 for a further extension of time in which to complete its installation of automatic train control.

Clarence H. Howard, president of the Commonwealth Steel Company, St. Louis, and W. L. Tedford, manager of the company's office in Paris, will attend the International Railway Congress in London, June 22 to July 6. These names, added to the list of delegates published in the *Railway Age* of May 16, bring the American delegation, to date, to a total of 55.

New York Central Runs Locomotives 520 Miles

The New York Central about April 1, inaugurated the practice of running its passenger locomotives through between Chicago and Buffalo in both directions without change. This run, over a distance of 520 miles, is one of the longest, if not the longest, established with coal burning locomotives.

Cars and Engines Inspected in April

The Bureau of Locomotive Inspection of the Interstate Commerce Commission inspected 6,635 locomotives during April, according to the monthly report of the Interstate Commerce Commission to the President on the condition of railroad equipment. Of these 3,030, or 46 per cent, were found defective and 291 were ordered out of service. The Bureau of Safety during the month inspected 101,037 freight cars, of which 3,002, or 3 per cent, were found defective, and 2,475 passenger cars, of which 23, or 0.9 per cent, were found defective. During the month 12 cases, involving 21 violations of the safety appliance acts, were transmitted to various United States attorneys for prosecution.

Another Bulletin Issued by

Locomotive Historical Society

Bulletin No. 9 has been issued by the Railway & Locomotive Historical Society, 6 Orkney Road, Brookline, Mass. The principal article is a 12-page sketch of the history of the Portland Company, Portland, Maine, as a former prominent builder of locomotives. This company, still flourishing in other lines, has built no locomotives since 1907. In 1852 it built the first locomotives for the Panama Railroad, and in 1882-83 built 100 for the Northern Pacific. Another bit of history contained in this pamphlet says that the New York & Erie, in 1856, employed 500 men, owned 203 locomotives and had a telegraph with 60 telegraph agents "so that any occurrence on the road could be instantly made known to the officers."

Large Expenditures Expected This Year

The Class I railways will spend approximately \$750,000,000 this year for new equipment and other capital improvements, according to a report submitted by the Bureau of Railway Economics to the American Railway Association at the regular spring meeting held in Chicago on May 15. This estimate is based on preliminary returns from practically all of the Class I railways throughout the United States. Of the \$750,000,000, approximately \$410,000,000 represents the amount of authorizations not actually spent when 1924 ended but carried over into the present year.

During the first three months in 1925, according to preliminary reports filed with the Bureau of Railway Economics, authorized capital expenditures for additions and improvements to railway property of Class I roads amounted to approximately \$662,322,000 including carry-over from 1924. Of that amount, \$157,469,000 was actually expended during the first quarter of this year, leaving more than \$504,850,000 to be spent later. Class I railroads during the first three months in 1924 authorized capital expenditures for

similar purposes amounting to \$765,177,000, of which amount \$188,374,000 was actually expended during the first three months of that year.

For the first three months in 1925, the rate of return on the property investment was 4.48 per cent, compared with 4.61 per cent during the corresponding period last year. On the basis of the tentative valuation, it was at the rate of 5.21 per cent during the first quarter this year compared with 5.33 per cent last year.

Gulf, Mobile & Northern Awards Fuel Contest Prize

The April Fuel Handicap was the most successful fuel contest ever held by the Gulf, Mobile & Northern. Engineer Frank Armour and Fireman W. J. Johnson on an eight-wheel passenger locomotive took first place in passenger service, using 1,340 lb. of coal per 100 passenger car miles. Engineer J. E. Stephens and Fireman J. T. Metcalf on a Decapod locomotive took first place in through freight service, using 90 lb. of coal per thousand gross ton miles. These men will attend the International Railway Fuel Association convention at Chicago on May 26-29, at the expense of the company. A new record of 122 lb. per thousand gross ton miles was established for all freight service including locals, and 1,535 lb. per 100 passenger car miles was established in passenger service for the month. Based on the business and the consumption for the previous month, the company saved over a car of coal a day.

Long Island Extends Electrification to Babylon

Electric operation was officially begun on the Long Island Railroad between New York and Babylon on Wednesday, May 20, when a special train carrying railroad officers and visitors was run between the two terminals. To provide electric passenger train service as far as Babylon on the Montauk division has called for an expenditure of approximately \$5,000,000. Authorization to electrify between Jamaica and Babylon—a distance of 28 miles was given by the board of directors in April, 1924. Work was commenced at once upon the preparation of specifications and plans for the substations, transmission lines, and distribution system and active construction was begun in June, 1924. Practically all the work was carried out by the railroad company's own forces, the undertaking being completed in less than a year. Six substations have been built together with two transformer stations for increasing the transmission line voltage from 11,000 to 33,000.

Mid-West Transportation Conference

To Be Held in Chicago

A conference of representatives of railway and highway transportation agencies in the middle west has been called by the Motor Truck Committee of the National Automobile Chamber of Commerce, to be held at the Hotel LaSalle, Chicago, on May 27 and 28. The conference will discuss the problem of highway transportation in the middle west and will attempt to solve the question of how wasteful competition in short haul transportation can be eliminated.

The promoters of the conference claim that the interests of owners of motor trucks and motor buses, the railroads, the electric railways and motor vehicle manufacturers are not necessarily opposed to each other and that there should not be wasteful competition, provided each facility is used in the field in which it has demonstrated its economic right to life.

Among the topics to be discussed are: "The relation of highway transportation to other transportation agencies," by A. J. Brosseau, president, Mack Trucks, Inc.; "The railroads and highway transport"; "Solving the city terminal problem," by W. H. Lyford, vice-president, Chicago & Eastern Illinois, and T. C. Powell, vice-president, Erie; "The field of the motor bus," by John A. Ritchie, president, Chicago Motor Coach Company; "Economics of motor bus operation," by H. A. Mullett, assistant gen-

eral manager, Milwaukee Electric Railway & Light Company; "Commodity transportation by motor truck," by Dr. J. Gordon McKay, United States Bureau of Public Roads; "Why the motor truck is successful as a railroad ally," by G. C. Woodruff, general freight agent, New York Central, and R. C. Morse, general superintendent of transportation, Northwestern region, Pennsylvania; "The public and highway transport," by Hon. William M. Jardine, Secretary of Agriculture, Washington, D. C.; and "Is regulation of interstate motor vehicles necessary?" by T. R. Dahl, vice-president, White Company.

Freight Claim Division Meeting

The thirty-fourth annual session of the Freight Claim division of the American Railway Association will be held at the Hotel Muehlebach, Kansas City, Mo., on May 25 to 28. The morning session of the first day (Monday) will be opened at 10 a. m. with an address by W. B. Kellett, chairman of the Freight Claim division, the report of the General Committee and the report of the secretary. An address will be given by H. E. Byram, Receiver of the Chicago, Milwaukee & St. Paul. The afternoon session will be devoted to the report of the Committee on Freight Claim Prevention and a general discussion on carload damages.

The morning session of Tuesday will be taken up by a general discussion on carload damages, principally rough handling and unlocated damage and an open discussion of freight loss and damage prevention. The afternoon session will be devoted to the report of the committee on rules of order, the election of officers and the selection of date and place of next year's annual session. At the morning session on Wednesday, loss and damage arbitration committees and overcharge arbitration committees will be elected and the joint report of committees on loss and damage rules and overcharge rules will be presented. The afternoon session will be taken up by the joint report of committees on loss and damage rules and overcharge rules and the report of the committee on overcharge rules.

At the morning session on Thursday the report of the committee on loss and damage rules will be presented. This report will be continued into the afternoon session.

Harriman Memorial Medals to Be Awarded

The E. H. Harriman Memorial Medals for the best record in accident prevention among American railroads will be awarded this year for the first time since 1916, according to Arthur Williams, president of the American Museum of Safety, New York. In making this announcement Mr. Williams said that analysis of Interstate Commerce Commission statistics indicates that there were fewer casualties among passengers and employees in railroad accidents during 1924 than during any of the preceding nine years. "Mrs. E. H. Harriman has authorized the resumption of the E. H. Harriman Memorial Medals for the year ending December 31, 1924," Mr. Williams said.

The Harriman Gold Medal will be given to the railroad which has the best record for accident prevention and health promotion throughout the system as a whole; a replica in silver will be awarded to the division of the road which has the best individual safety record; and a replica in bronze will be presented to the employee who, in the judgment of the road, has been most conspicuous in furthering accident prevention. The awards will be made by the following committee:

R. H. Aishton, President, American Railway Association.
Samuel O. Dunn, Editor, *Railway Age*.
John Jacob Esch, Interstate Commerce Commissioner.
Julius H. Parmelee, Director, Bureau of Railway Economics.
Arthur Williams, Chairman.

The conditions under which the awards will be made, which were worked out under the direction of Julius Kruttschnitt, include a table of weights providing a penalty fifty times as great for fatal accidents as for non-fatal. Railroads are required to report accidents in and around shops, on boats or wharves, at stations, freight houses, engine houses, coaling stations, water stations, and accidents which occur in connection with construction, repair, painting, and maintenance of equipment, as well as train accidents and train service accidents.

Copies of the conditions of competition and of the forms on which the accident data are to be submitted have been sent to the president of every Class I steam railroad in the United States.

The award will be based on the accident experience of railroads during the calendar year of 1924; the records of this experience should be submitted to the American Museum of Safety in New York City by June 1.

New York Central Operates Soil Fertility Car

During March and April the New York Central operated a soil testing laboratory car in Pennsylvania and Michigan to show farmers the value of limestone in farming operations. The New York Central for a number of years has been conducting a campaign to increase the use of agricultural limestone on soils, and nearly 700 individual demonstrations have been made on farms in Ohio, Indiana, Illinois and Michigan. During the spring of 1924 the first soil testing laboratory car was operated by this company in southeastern Ohio. The soil tests were made by representatives of Ohio State University, and the interest taken in the plan by farmers and the university resulted in the continuation of the operation of the car in Pennsylvania and Michigan.

The demonstration coach used in Pennsylvania was completely equipped as a laboratory with apparatus for testing limestone requirements, soil acidity, phosphorous content and organic matter. Men to test lime requirements and organic content were furnished by the Pennsylvania State College and the tests for phosphorous content were made by the assistant chemist of the Pennsylvania State Department of Agriculture. Exhibits showing the value of liming materials and fertilizers were installed, and samples of materials as produced within a reasonable shipping radius were dis-



Interior of Soil Fertility Laboratory Car

played. Farmers desiring one or more samples of their soil tested were required to register and give a brief history of their farming practices for the past four years. A sample was then subjected to a free test and the compiled data passed to a crop and soil expert from the college who diagnosed the case and prescribed for the farmer the best method of handling his soil. These prescriptions included the kind of rotation which would prove most effective and economical, the kind of fertilizer to use and how much, and the kind of liming material to use.

Accompanying the laboratory were Professors J. B. R. Dickey, N. Schmitz, R. J. Beamish, A. H. Paschall, and J. R. Graham, of the Pennsylvania State College, G. J. Kuhlman, of the Pennsylvania State Department of Agriculture, W. K. Moffett, of the Pennsylvania State Chamber of Commerce and R. W. Quackenbush, general agricultural agent, and Earle G. Reed, agricultural agent of the New York Central. Full-day and half-day stops were made at 22 towns in northwestern Pennsylvania. A total of 1,327 samples of soil were tested and the specialists were consulted by 2,607 farmers.

The Michigan operation covered 25 towns and differed from the Pennsylvania operation in that less attention was paid to the testing for phosphorous content and more consideration given to consultation. In addition to the tests made on soil, provision was made for the testing for calcium carbonate and marl samples submitted by farmers having such deposits on their farms. Those accompanying the laboratory included Dr. M. M. McCool, Professors George Grantham, O. B. Price and J. S. Hyde, of the Soils and Crops Department, Ezra Eby and J. A. Porter, soil testers, and H. J. Gallagher, of the Agricultural Engineering Department, all of Michigan State College. E. J. Leenhouts, agricultural agent of the New York Central, also accompanied the laboratory. The samples of soil tested totaled 1,805 and the samples of marl tested totaled 102.

Canadian Rates Bill Being Prepared

Last Monday in reply to a question by Mr. Meighen, leader of the Conservatives in Parliament, as to when the House could expect the measure providing for equalization of freight rates George P. Graham, Minister of Railways and Canals, said, "It is now under consideration. It is a very important bill. Mistakes have been made before, I am told, even in the drafting of legislation, and the government wants to be sure that no mistakes are made this time. The bill will be introduced in plenty of time this session to give the honorable members opportunity for full discussion."

Repeal of the Crow's Nest Pass Agreement in order to give the Dominion Railway Board full authority and direction over the entire railway rate structure in Canada was urged upon the government last week by a delegation representing the Toronto Board of Trade and the Ontario Associated Boards of Trade. The grounds for the request were discriminations and inequalities and general demoralization of business resulting from the present situation in regard to railway rates. It was pointed out that there was always the right to appeal from the decisions of the Dominion Railway Board.

New C. N. R. Capitalization Plan by End of Year

By the end of this year the management of the Canadian National will be ready to make some definite recommendations to the government for the purpose of clarifying and strengthening the financial structure on which the road operates, according to a statement made by Sir Henry Thornton, president, to the House Committee on National Railways and Shipping at Ottawa last week in answer to a question by W. F. Maclean, Conservative member for one of the Toronto seats. The latter had urged that a commission of three experts in accounting should be named to inquire into the financial position of the National which question he thought the most important before the country at this time. Sir Henry said there was danger of too many experts on any case, but that in this case he had had experts at work for some time.

"Up until a short time ago," continued Sir Henry, "the administration of the Canadian National was concentrating its attention upon trying to create a railway out of the fragments at our disposal and make an integral entity out of the various parts, which means to make the wheels go round. That work is nearly completed. One of the remaining big problems is a careful examination of the financial conditions and the financial structure of the various parts making up the National System. This big task is now being dealt with, and within this year we will have at hand sufficient data to be able to make a definite recommendation as to what should be done."

A general pension scheme for the entire Canadian National was being worked out, said Sir Henry in answer to other questions. It would probably be ready to go into effect next year, and for some time thereafter the people might look for a considerable increase in the amount of money required for that purpose. Then for a subsequent period there would be a steady decline until it would finally reach a permanent level somewhat above what it now is.

Sir Henry was asked, incidentally, if Canadian National trains would sell 4.4 per cent beer in Ontario under the new law.

"We'll sell anything that will make money and is within the law," said Sir Henry.

Traffic News

The Bessemer & Lake Erie, employing about 4,500 men, went through the year 1924 without a fatal accident to any employee in its service.

The Great Northern has a schedule of 92 special trains which are to be run this summer to carry delegates to conventions on the Pacific coast and tourists to national parks.

The Columbus (Ohio) Transportation Club has been organized by railroad and industrial traffic men to establish a closer relationship between railroad and industrial organizations. Officers of the club are, president, C. O. Ruggles; vice-president, P. C. Hodges; secretary, C. H. Brown; and treasurer, J. G. Young.

The amount charged to loss and damage by the Freight Claim division of the American Railway Association for February, 1925, was \$3,227,094 as compared with \$4,219,773 for February, 1924, a decrease of 23.5 per cent. Total loss and damage for the first two months of 1925 was \$6,776,191 as compared with \$8,951,386 for 1924, decrease of 24.3 per cent.

The Traffic Club of Omaha has been organized by shippers and railroad representatives in Omaha, Neb. The officers elected are, president, J. A. Kuhn, traffic manager of the Omaha Grain Exchange; vice-presidents, R. R. Mitchell, assistant freight traffic manager of the Union Pacific and A. F. Stryker, traffic manager of the Omaha Livestock Exchange; and secretary-treasurer, M. V. C. McCormack, assistant traffic manager of the M. C. Peters Mill Company.

George J. Mead, chief engineer of the Wright Aeronautical Company, in the speedboat "Teaser" traversed the Hudson River from New York to Albany, about 150 miles, on May 20, in two hours and 40 minutes, or 20 minutes better time than the fastest regular railroad train between the two cities. The return trip was made on the same day in three hours, five minutes. The "Teaser," built at City Island, New York, is 39 ft. 10 1/2 in. long, 7 ft. 8 in. beam, and has motors of 500 horse power.

Freight Traffic in March

Freight traffic carried by the railroads in March amounted to 35,334,617,000 ton miles, according to reports compiled by the Bureau of Railway Economics. This was a decrease of 3 per cent as compared with the same month last year and of nearly 10 per cent as compared with March, 1923. In the Eastern district, the decline was 6.5 per cent, but in the Southern district there was an increase of 2.1 per cent and in the Western district an increase of one-half of one per cent.

For the first three months this year, the volume of freight amounted to 105,929,345,000 net ton miles, a decrease of 0.9 of one per cent as compared with 1914 and 3.3 per cent as compared with the corresponding period in 1923.

The daily average movement per freight car in March was 26.4 miles, a decrease of nine-tenths of a mile compared with March last year and a decrease of 0.6 mile below March, 1923.

The average load per freight car in March was 26.1 tons, half a ton less than last year and 1.7 tons below March, 1923.

Rock Island-Cotton Belt Joint Facilities

On June 30 the Chicago, Rock Island & Pacific will discontinue the joint use of the Gulf, Colorado & Santa Fe's freight facilities in Dallas, Texas, when a joint arrangement with the St. Louis Southwestern will become effective, under which the Rock Island will handle its freight traffic in Dallas through the facilities of the Cotton Belt. The plan of these two companies involves the ultimate development of a large tract of land lying south and east of the present Union station in Dallas into a modern freight terminal covering several blocks. The Ft. Worth & Denver City has obtained trackage rights over the Chicago, Rock Island & Gulf

between Ft. Worth and Dallas with a view of using the new Rock Island-Cotton Belt Dallas terminals. The Ft. Worth & Denver City has taken over the rights of the Trinity & Brazos Valley in the Dallas Union Terminal Company. The Cotton Belt is now completing the first section of a new freight yard of six tracks between Bellevue avenue and Montgomery street with an initial storage capacity of 350 cars. The facilities of the Chicago, Rock Island & Pacific and the St. Louis-Southwestern at Brinkley, Ark., will also be operated jointly.

A Women's Traffic Club

The Women's Traffic Club of Los Angeles has been launched with a charter membership of sixty. The club is composed of women traffic managers, assistants to traffic managers and representatives of business firms and transportation systems who are interested in traffic problems.

At a meeting held on May 13 at the Los Angeles Transportation Club, in the Alexandria Hotel, Los Angeles, Cal., the election of officers for the coming year resulted as follows: president, Ella A. Hausen of Mailliard & Schmiedell; first vice-president, Grace E. Firth of Wheeler, Elder & Elder; second vice-president, Emma A. Kentz of the Union Pacific System; recording secretary, Gertrude B. Sears of Hamilton, Wallace & Bryant; corresponding secretary Tessie M. Phipps of Norton Lilly & Co.; secretary-treasurer, Mary C. Leffler of Theobald Berger Co.; sergeant-at-arms, Doneece Boyles of Barker Brothers.

Major Roger Marchetti, admiralty lawyer, spoke to the club relative to a series of lectures on admiralty law which he is to deliver to the members; and Fred E. Hooper, of the American Hawaiian Steamship Company, gave a short address on shipping policy in the United States. Miss Kentz, who appears to be the only railroader among the officers, is in the office of W. F. Lincoln, general freight agent of the Union Pacific.

Boston & Maine Proposes

Extensive Use of Automobiles

The Boston & Maine has made plans for discontinuing train service on four short unprofitable lines in Massachusetts and five in New Hampshire, and hearings are being held this week at Boston, Mass., and Concord, N. H., on the applications to the Interstate Commerce Commission and the state authorities for leave to establish motor bus and truck routes instead of railroad train service. The applications to the commissions set forth in detail the alleged severe losses which have been sustained by the railroad company in operating these lines.

For most of the lines, the company proposes to operate automobiles on the highways both for passengers and for freight; but on the Lawrence branch no bus service is proposed; on the Tewksbury lines no motor service whatever; between Manchester, N. H., and Milford, no motor service; Belmont branch, motors for freight but not for passengers; Bethlehem branch, motor bus service in the summer time; no freight service.

Where local interests propose to operate motor bus or motor truck routes, the railroad does not intend to enter into competition. The railroad company proposes conferences with local committees as to both schedules and rates.

B. H. Meyer of the Interstate Commerce Commission will participate with the state commissions in the hearings. The lines under discussion in Massachusetts aggregate 62 miles in length, those in New Hampshire, 94 miles.

The Interstate Commerce Commission has already approved discontinuance of train service on the line of the Boston & Maine from Nashua, N. H., southward to North Acton, Mass., 20 miles.

The Boston & Maine has announced also that store-door delivery and collection of freight is to be begun, about June 1, in three Massachusetts cities—Boston, Lowell and Lawrence; also that automobile trucks running on the highways will be operated for local freight service between Boston and Lowell, 26 miles, and between Boston and Lawrence, the same distance. It is proposed to contract with existing trucking companies where practicable.

Preliminary to the decision to make these changes the railroad company made extensive studies of city freight movement. It was found that, of the total trucking to and from its freight houses in Boston, 43 per cent was done by horse and wagon. Taking all vehicles together, both animal and motor, the average load to or from the freight houses was only 838 lb.

Commission and Court News

State Commissions

California Truck Operators Under Control of Railroad Commission

Motor truck operators in California who have been operating on the highway without a certificate from the Railroad Commission, under the exemption granted to carriers of farm products and farm necessities, are placed under jurisdiction of the commission by the decision of the California Supreme Court, holding the act granting the exemption to be unconstitutional. It is estimated that there are more than 500 carriers operating under the provisions of the act and an additional 500 or more operating ostensibly as farm carriers but without legal status as such. The railroad commission has directed carriers operating without permits to apply at once to the commission for certificates for permission to continue their operations.

Court News

No Liability for Loss by Unprecedented Storm

The Texas Court of Civil Appeals holds that where the jury found that an unprecedented storm by which a shipment was marooned for four days was the proximate cause of loss and damage to a shipment of freight, and that the negligence of the carrier was not the proximate cause, no judgment could be rendered for the plaintiff shipper except the amount admitted by the carrier to be due.—Bergman Produce Co. v. Am. Ry. (Tex. Civ. App.) 262 S. W. 891.

Northern Pacific's Land Patents Held Valid

The federal district court for Montana holds that, according to the long-established criterion of mineral land as land that at the vital time is known to contain minerals in quality and quantity reasonably inspiring the average man to believe that expenditure in development is justified, in that it is reasonably probable that such minerals will be found to return reasonable profits upon the investment, and more valuable therefore than for other uses, the evidence was insufficient to warrant the cancellation of a land patent to the defendant railroad company of odd-numbered sections not mineral other than iron or coal. The years prior to classification by the Interior Department "disclosed only that in reasonable probability the land was valuable for the mineral content known and for which it was located and to some extent worked, iron for fluxing purposes, wherein gold and silver might be of incidental worth and value. Iron, the principal thing, gave its mineral character to the land, not gold and silver, incidental things. And mineral character by reason of iron subjected the land to defendant's grant."—United States v. Northern Pacific, 1 Fed. (2nd) 53.

United States Supreme Court

Land-Grant Passenger Fares

The Supreme Court of the United States, in an opinion handed down on May 11, by Justice Sanford, decides, in a suit brought by the Southern Pacific, that bills collected from the government for the transportation of certain persons at land-grant rates, must be accepted as final; that a suit for the difference between the fares at land-grant rates and at regular rates has no standing. Payment on these bills was accepted without protest; and this acceptance the court holds was acquiescence in the fairness of the rates. The transportation took place prior to June 18, 1916. The lower rates applied to troops, but the passengers in question were applicants for enlistment in the army, civilian employees and others, none of them soldiers.

On certain other claims, in similar cases, where the road had given receipts bearing a protest, it is held that the carrier may rightfully make claim for the additional amounts. A Western Pacific suit was decided on the same principles.

Labor News

The locomotive repair shops of the Chicago & Alton at Bloomington, Ill., have been closed for 60 days.

Fitzgerald Re-elected

E. H. Fitzgerald was re-elected grand president of the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees at the close of the annual convention in Kansas City, Mo., last week.

P. R. R. Strike Continues "With Vigor"

The executive council of the Railway Employees' Department of the American Federation of Labor, at a meeting in Washington on May 12 and 13, adopted resolutions soliciting "the largest possible support and co-operation of all those who are opposed to industrial tyranny," in behalf of the membership of the six shop crafts formerly employed on the Pennsylvania, whose strike, which began on July 1, 1922, is said to be "continuing with full vigor."

Conductors to Support Only Republican and Democratic Candidates in Future

The Order of Railway Conductors, at its recent convention at Minneapolis, Minn., decided to withdraw its support from the so-called labor candidates in elections in the future. The brotherhood will revert to its old non-partisan policy and will support its favorites for office from the candidates nominated by the two regular parties, the Republican and the Democratic. "The experience we have gained," said a report by the general officers, "since the adoption of a resolution by the grand division of our order in 1919, committing the order to the formation of a labor party, clearly indicates that the political alignments of the United States are such as to make the formation of a labor party impracticable so far as its effectiveness in the cause of labor is concerned."

Enginemen Try to Force C. & N. W. to Discontinue Left-Hand Operation

An order directing the Chicago & North Western to operate its trains on the right hand track in double track territory instead of on the left hand track as at present, is asked in a petition by the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen now pending before the United States Railroad Labor Board. The brotherhoods claim that the left hand method is hazardous since enginemen must look across the track ahead of the engine in order to determine the position of block signals. In opposing the petition the North Western points out that the cost involved in the reconstruction of the block signal system, the relocation of sidings and switches, and the rearrangement of stations and platforms would make the change impossible. The management also denies that the present method is dangerous. The date for the hearing of the complaint has not been set.

Important Railway Labor Conference Planned

Plans for a meeting of railway executives, officers of the railway labor brotherhoods, members of railroad veterans' and pension associations and a number of prominent public citizens for the purpose of thrashing out existing points of dispute between railway managements and the employees, are being formulated by William G. Lee, president of the Brotherhood of Railroad Trainmen. Invitations to the conference which is planned to be held at Cleveland, Ohio, beginning June 29, are to be sent out at once. It is pointed out that a study of the labor situation when there is nothing important in dispute, as is the case at present, might be productive of some good. It is distinctly understood, however, that no action at this conference will be taken as binding upon any railroad or organization but that it is purely an educational

move. The hope, however, is that from the conference some suggestions will come which may lead to later conferences where definite policies may be adopted.

Labor Board Decisions

Santa Fe Organizes Maintenance of Way "Company Union"

Complaint was made to the labor board by the United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers that the Atchison, Topeka & Santa Fe and affiliated companies were arranging to enter into negotiations with a committee representing the "maintenance of way and miscellaneous foremen, mechanics and helpers" on the Atchison, Topeka & Santa Fe system as a means of supplanting the representation of the United Brotherhood on that system, contending that this action was not in conformity with the spirit and intent of the Transportation Act of 1920. The decision of the labor board is that a secret ballot shall be taken to determine the proper representation for the track, bridge-and-building and miscellaneous foremen, bridge-and-building inspectors, etc., in the employ of the carriers, the procedure to be in conformity with that described in Decision No. 218.—*Decision No. 3310.*

Rules for Dining Car Employees

The following rules governing working conditions of dining car department employees were approved by the Railroad Labor Board in a dispute between the Chicago, Rock Island & Pacific and the Railway Men's International Benevolent Industrial Association. According to the rules, 240 hours or less, in regular assignment, will constitute a month's work for employees ready for service the entire month and who lose no time on their own account. Employees will be paid overtime on an actual minute basis for all time on duty in regular assignment in excess of 240 hours at the regular rate, except that actual continuous time authorized for rest on trips will be deducted from the continuity of time in all cases where the interval of release from service exceeds one hour. Extra employees performing road service in place of regularly assigned employees, or on an extra assignment, shall be paid in accordance with their classification and shall receive the same compensation as regularly assigned employees would receive for the same service. Not less than 96 hours off duty each calendar month in 24-consecutive-hour periods, or multiples thereof, will be allowed at designated home terminals for employees whose assignment and service does not permit of at least 12 consecutive hours off duty period at their home terminal each 48 hours. Employees required to work on assigned lay-over days are to be paid extra in addition to monthly wages.—*Decision No. 3311.*



Classroom of Berlin Railway School—Examining Prospective Enginemen

Foreign Railway News

Isthmus of Tehuantepec Taken

Over by Mexican National

The Isthmus of Tehuantepec Railroad was officially taken over by the Department of Communications of the Mexican government on May 4. The road is now being managed by the director-general of the National Railways of Mexico.

Soviet Plans New Siberian Line

According to press despatches from London, the envoy of the Russian Soviet government to London has recently announced that his government plans a new trans-Siberian railway through northern Siberia, to traverse areas rich in minerals, lumber and other natural resources. The envoy stated that it was the intention of the government to build this line to a high physical standard.

Ecuador Controls Guayaquil & Quito

The Government of Ecuador has purchased a substantial block of stock of the Guayaquil & Quito, which added to the 49 per cent it now holds, gives it control. The road has never been a paying one. Ten conductors and ten enginemen of American nationality employed by the road have been replaced by native labor and, since there are no other railways in Ecuador, are trying to find employment in some other country.

New Equipment on British Railways

The total number of locomotives, passenger coaches and freight cars built and purchased by the four groups composing the railway transportation system of Great Britain during the years 1923 and 1924, according to statistics received by the Bankers Trust Company of New York through its British Information Service, were as follows:

	Year	Built in the Companies' Shops	Purchased
Steam Locomotives.....	1923	232	28
	1924	231	241
Passenger Coaches.....	1923	543	29
	1924	784	71
Freight Cars	1923	17,200	4,521
	1924	26,797	6,777

The figures include a certain number of units purchased from other companies, etc., and in particular 125 locomotives purchased from the government in 1924.

Miscellaneous Notes

The following items have been received by the Bureau of Foreign & Domestic Commerce from its agents abroad:

Slower speed of German trains is inconveniencing travelers, especially on such routes as that from Berlin to Hamburg. In 1924 the 286 kilometers between the two cities was covered in 3 hours 11 minutes by the fastest express train, whereas it now takes 4 hours 20 minutes.

A new railway station at Tandjong Priok, Java, was opened April 6, simultaneously with the opening of the electric train service between Meester Cornelis and Priok, a suburb and port of Batavia.

The American system of train dispatching will be adopted in Brazil by the Central Railway, according to the Monitor Mercantil of February 17.

The International Industrial Exposition at La Paz, Bolivia, will be opened on August 6. It has been decided to grant entrance free of duty and reduction of freight rates to samples sent to this exposition, and lands for the erection of pavilions. All American industries are invited to take part.

The electrification of Bordeaux-Hendaye section of Midi Railway is being pushed. Completion of the Bayonne-Hendaye section is expected by July 1 and of the Bayonne-Bordeaux section early next year. Electric locomotives of 2,000 to 3,000 h.p. will pull trains at a speed of over 60 miles an hour.

Equipment and Supplies

Locomotives

THE NORTHERN PACIFIC contemplates buying 6 Mountain type locomotives.

THE DELAWARE & HUDSON is inquiring for 10 Consolidation type locomotives.

THE NEW YORK CENTRAL is reported as inquiring for 20 small Diesel yard locomotives.

THE PERPIO MINES have ordered one, four-wheel switching locomotive from the Baldwin Locomotive Works.

THE SHAMOKIN COAL COMPANY has ordered one, four-wheel switching locomotive from the Baldwin Locomotive Works.

THE DICKEY CLAY MANUFACTURING COMPANY has ordered one, four-wheel switching locomotive from the Baldwin Locomotive Works.

THE STANDARD OIL COMPANY OF NEW JERSEY has ordered 2 four-wheel switching locomotives from the Baldwin Locomotive Works.

THE ATLANTIC COAST LINE has ordered 25 Pacific type locomotives from the Baldwin Locomotive Works. This is in addition to the 35 locomotives ordered from the same builder and reported in the *Railway Age* of March 14.

THE NEW YORK CENTRAL has ordered from the American Locomotive Company 20 locomotive tenders of 15,000 gal. capacity, for the New York Central, and 6 locomotive tenders of 16,000 gal. capacity, for the Pittsburgh, McKeesport & Youghiogheny.

Freight Cars

THE MID-CONTINENT PETROLEUM COMPANY has ordered 3 tank cars of 40 tons' and 6,000 gal. capacity, from the American Car & Foundry Company.

THE HUDSON & MANHATTAN has ordered one flat car body with steel underframe, of 30 tons' capacity, from the American Car & Foundry Company.

THE DELAWARE, LACKAWANNA & WESTERN has ordered 25 caboose cars from the Major Car Corporation. Inquiry for this equipment was reported in the *Railway Age* of May 9.

THE CHICAGO, MILWAUKEE & ST. PAUL is now inquiring for repairs to 1,000 stock cars. Mention was made in the *Railway Age* of April 25 that this company would have 1,000 cars rebuilt.

THE VIACAO SUL MINEIRAS RAILWAY (Brazil), is inquiring through the car builders for 130 box cars of 20 tons' capacity, 20 all steel tank cars of 20 tons' capacity, 50 cattle cars of 12 tons' capacity, 40 gondola cars of 20 tons' capacity and 50 flat cars of 20 tons' capacity.

Passenger Cars

THE RIO GRANDE DO SUL (Brazil) is inquiring through the car builders for 16 passenger cars.

THE HAVANA CENTRAL has ordered 8 interurban high speed electric motor coaches 51 ft. 10 in., with seats for 60 passengers, from the Wason Manufacturing Company.

Iron and Steel

THE NEW YORK CENTRAL has received bids on 1,500 tons of steel for bridge repairs.

THE CHESAPEAKE & OHIO is inquiring for 700 tons of steel for shops at Russell, Ky.

THE MAINE CENTRAL has received bids for two bridges involving about 350 tons of steel.

THE ILLINOIS CENTRAL is inquiring for 380 tons of structural steel for use at Riverside, Ill.

THE NORTHERN PACIFIC is inquiring for 650 tons of structural steel for use at Minneapolis, Minn.

THE READING COMPANY has ordered 150 tons of steel for bridges from the McClintic-Marshall Company.

THE NEW YORK CENTRAL has ordered 160 tons of structural steel for a bridge at New Carlisle, Ind., from the Ft. Pitt Bridge Works.

THE NORTHERN PACIFIC has ordered 673 tons of structural steel for a bridge at Minneapolis, Minn., from the Fort Pitt Bridge Works.

THE LOUISVILLE & NASHVILLE has ordered 1,200 tons of structural steel for a bridge at Knoxville, Tenn., from the American Bridge Company.

Machinery and Tools

THE ATCHISON, TOPEKA & SANTA FE is inquiring for two turret lathes.

THE NORTHERN PACIFIC is inquiring for two 90-in. locomotive journal turning machines.

THE NEW YORK CENTRAL has ordered four standard ditchers from the American Hoist & Derrick Company.

Miscellaneous

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS has placed an order for coal handling machinery for the reconstruction of an old coaling station at Fillmore, Ind., with the Roberts & Schaefer Company.

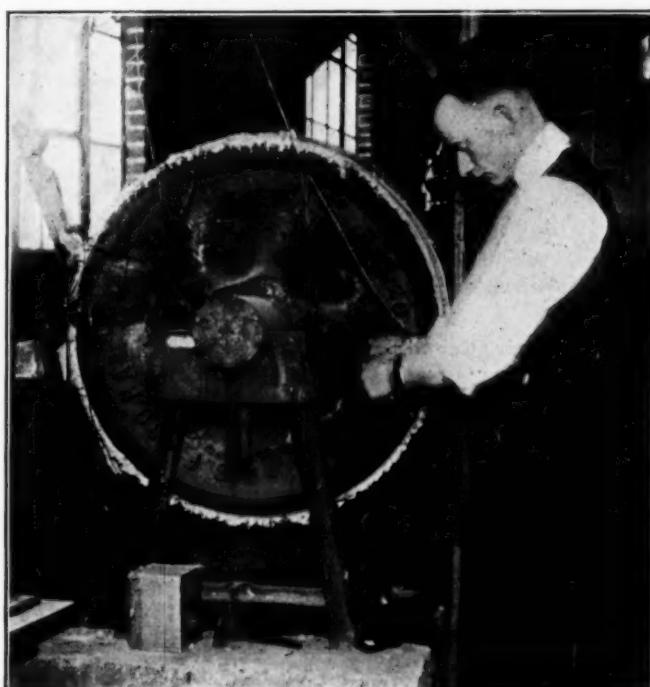
THE ILLINOIS CENTRAL has placed an order with the General Electric Company for 11 control equipment and 22, 250 h.p. motors, in addition to those ordered last fall. The Commonwealth Edison Company has sublet a contract to the General Electric Company for 11 synchronous converters, to be used in the seven substations being built to supply 1,500 volts direct current to the suburban electrified zone of the Illinois Central in the Chicago suburban territory.

Signaling

THE CHESAPEAKE & OHIO has ordered from the Union Switch & Signal Company an electro-mechanical interlocking machine for Clifton Forge, Va., six mechanical levers and four Style "S-8" electric units.

THE TEXAS & PACIFIC is to install a Saxby & Farmer mechanical interlocking, four working levers, at Jefferson, Texas; and one of nine working levers at South Mansfield, La.; materials furnished by the Union Switch & Signal Company.

THE SOUTHERN PACIFIC has ordered from the Union Switch & Signal Company, 21 semaphores, one-arm, Style "B," with the necessary relays, for installation between Eureka, Tex., and Cypress, 19 miles; also seven to be used between Avondale, La., and Harvey, eight miles.



Keystone

The U. S. Bureau of Standards Is Making Tests to Determine Cause of Wheel Failures

LOCOMOTIVES ORDERED INSTALLED AND RETIRED

Month—1924	Domestic orders reported during month	Installed during month	Aggregate tractive effort	Retired during month	Aggregate tractive effort	Owned at end of month	Aggregate tractive effort	On order first of following month	Building in R. R. shops
January	125	271	15,228,895	178	4,447,721	64,989	2,552,694,953	439	14
February	85	214	11,296,088	175	4,906,435	65,029	2,559,519,253	457	10
March	283	176	10,457,064	181	6,933,173	64,911	2,560,076,766	520	7
April	100	97	4,167,388	112	2,881,385	64,896	2,561,362,769	552	11
May	107	153	6,949,353	107	2,600,445	64,942	2,565,706,413	447	10
June	1	160	7,687,383	178	4,575,358	64,924	2,569,121,875	360	72
July	83	197	10,590,558	113	3,354,456	65,008	2,576,433,377	401	63
August	8	229	12,513,395	166	5,346,176	65,062	2,583,372,980	324	50
September	101	160	7,061,560	151	4,351,378	65,071	2,586,083,994	285	37
October	135	113	5,743,775	220	5,712,633	64,964	2,586,106,026	358	76
November	90	181	8,460,795	263	7,749,794	64,882	2,586,826,278	265	70
December	172	295	12,311,451	304	9,724,426	64,871	2,589,358,971	287	64
Total for year 1924	1,413*	2,246	...	2,148	...	...	...	...	...
January, 1925	27	167	7,455,971	213	6,242,079	64,824	2,590,525,478	280	81
February	49	125	6,233,494	169	5,118,878	64,779	2,591,618,849	293	77
March	106	138	6,249,721	170	4,888,933	64,747	2,592,979,637	315	83
Total for 3 months	...	430	...	...	...	...	...	...	...
Total for 4 months	266	...	...	...	...	...	...	...	...

Details as to orders from *Railway Age* weekly reports. Figures include all domestic orders placed with builders and railroad shops, but not rebuilt equipment.

Figures as to installations and retirements prepared by Car Service Division, A. R. A., published in Form C. S. 56A-1. Figures cover only those roads reporting to the Car Service Division. They include equipment received from builders and railroad shops. Figures of installations and retirements alike include also equipment rebuilt to an extent sufficiently so that under the accounting rules it must be retired and entered in the equipment statement as new equipment. Figures as to orders as given in first column of table is not therefore comparable with figures relating to installations given in succeeding columns.

*Corrected figure.

Supply Trade News

The Sullivan Machinery Company has opened a branch office at Pottsville, Pa., in conjunction with the Pottsville Supply Company, Inc., which has been its local agent.

The Easton Car & Construction Company, Kansas City, Mo., has been incorporated to build railroad equipment by Thomas R. Hunt and E. S. North, with offices at 1127 Scarritt building.

George F. Jenkins, president of the George P. Swift Company, contractors, Chicago, has resigned to become representative of the Walsh Construction Company and the H. A. Petters Company, general contractors, with headquarters in Chicago.

A. M. Ripley has been appointed to the railway signal sales department of the Electric Storage Battery Company, with headquarters in Chicago. Mr. Ripley was formerly district representative in northern Illinois for the company's automobile battery department.

The L. B. Foster Company has removed its general offices from Pittsburgh, Pa., to its warehouse yards at Carnegie. L. B. Foster, president, remains at the former headquarters in the Park building, Pittsburgh, where a mailing office will be maintained. All other offices have been removed to Carnegie.

The Austin Company, Cleveland, Ohio, has removed its New York City office from 217 Broadway to larger quarters in the Equitable building, 120 Broadway. The New York staff has been increased; J. K. Gannett is district manager of the New York office; A. D. Engle and D. C. Raymond are his assistants.

The Crane Company, Chicago, celebrated its seventieth anniversary on May 21, by giving a dinner to 655 employees and former employees, all of whom had served from 25 to 55 years. Souvenir silver bells emblematical of their length of service were awarded. One hundred and twenty-two of the six hundred and fifty-five already have retired from the service of the company.

Obituary

George Smart, for the past eight years one of the directing editors of Iron Age, died on May 16, at his home in Forest Hills Gardens, N. Y., after an illness of one week, of erysipelas. Mr. Smart was born on November 11, 1863, at Chillicothe, Ohio. He attended Ohio State University, at Columbus. Thereafter, he took up reportorial work on Columbus papers, and for a year was legislative correspondent of the Cincinnati Inquirer at the Ohio capital. Later, he served for eight years on the staff of the Cleveland Plain Dealer, as reporter, editorial writer and Washington correspondent. He was one of the founders of the Columbus Citizen, in 1899, and for three years was its editor. Mr. Smart subsequently served for three years as an associate editor of the



GEO. SMART

Iron Trade Review, and from 1905 to 1917, as editor. He became associated with the Iron Age in 1917. Mr. Smart's part in the work of the Iron Age had mostly to do with its news and market pages. He was chairman of the Editorial Conference of the New York Business Publishers' Association in 1923 and 1924, and for the past two years he had been a member of the executive committee of the National Conference of Business Paper Editors. He had also served as president of the Ohio State University Alumni Association. At Cleveland he was a member of the industrial committee of the Chamber of Commerce, and in 1916, was chairman of its armor plate plant committee. He also took an active interest in civic affairs.

Trade Publications

MASTER INSPECTION CARS.—Fairmont Railway Motors, Inc., Fairmont, Minn., has issued a 12-page bulletin illustrating and describing the N-2 section gang car and the NC-2 heavy duty car, which comprise recent developments of that company. The use of illustrations and topical side headings form an important adjunct in the presentation of the descriptions in calling particular attention to the new special features of the equipment described in the bulletin.

STOKERS.—A two-page illustration showing the application of the Du Pont Simplex Type B stoker to a locomotive is contained in Bulletin No. 101 which has been issued by the Standard Stoker Company, New York. The stoker, which weighs approximately 5,800 lb., is simple in application, and the only stoker parts located on the backhead of the locomotive are the small distributing valves which may be located under the fire door opening, or any other place convenient to the fireman.

ROOF STANDARDS.—The Federal Cement Tile Company, Chicago, has recently issued a 32-page, illustrated, 8½-in. by 11-in. booklet on roof standards as applied to this company's products. The text includes standard specifications for interlocking and glass tile and for flat and channel slabs. This is followed by 26 pages of detailed working drawings in the form of reproduced blueprints illustrating the application of pre-cast reinforced concrete slabs to all types of roof construction.

AUXILIARY LOCOMOTIVE.—Catalogue H, descriptive of the operation, advantages, principal details and performance of the Bethlehem auxiliary locomotive, which is a tractor truck used as the rear truck of the locomotive tender, has been issued by the Bethlehem Steel Company, Bethlehem, Pa. This unit carries an auxiliary steam engine actuated by steam from the locomotive and controlled from the cab. Its function is to add more tractive force for starting, accelerating and operating at low speeds on heavy grades.

COAL AND ASH PLANT.—In a four-page folder issued by the Ogle Construction Company, Chicago, a description is given of a simple coal and ash handling plant consisting of two elevating towers erected between a pair of tracks, one of which is used by cars for discharging coal and receiving ashes, while the other is used by locomotives in dumping cinders and receiving coal. The coal unloading track is equipped with a track hopper connected with the coal elevating tower, while the locomotive track has a cinder pit connected with the cinder elevating tower. Drawings and photographs supplement the text in the folder which the company has issued.

SPECIFICATIONS FOR ROOFING.—The Barrett Company, New York, has recently published the first issues of a set of five booklets which is entitled Architects and Engineers Built-Up Roofing Reference Series. Volumes 1 and 2, which have just been issued, are attractive, large-sized, 36 and 20 page booklets respectively, and cover flat roof and steep roof specifications. Each volume is illustrated with full page reproductions of blueprints, giving the details of built-up roofing, the text giving complete specifications for 3, 4 and 5-ply roofing laid on board tile, and poured and pre-cast concrete and gypsum decks. The remaining booklets to be issued cover roof flashing, roof drainage, damp-proofing and water-proofing for roofs.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—A contract has been awarded for the construction of a tender repair shop at Albuquerque, N. M., reported in the *Railway Age* of May 2.

ATCHISON, TOPEKA & SANTA FE.—A contract has been awarded to Sprague & Nisely, Beatrice, Neb., for the construction of a 56-mile extension from Elkhart, Kan., southwesterly into Texas county and Cimarron county, Okla., authorization for which was reported in the *Railway Age* of April 18. The contract includes grading of line, track laying and construction of all necessary buildings and other facilities except bridges, and amounts to approximately \$600,000. A sub-contract for the construction of buildings, including stations, section houses, and water stations, has been awarded to Joseph E. Nelson & Sons, Chicago.

ATLANTIC COAST LINE.—This company has awarded a contract to Roberts & Schaefer Company, Chicago, for the construction of 500-ton reinforced concrete coaling stations at Petersburg, Va., and at Fayetteville, N. C., and a 250-ton coaling station at Trilby, Fla. A contract has also been awarded to Roberts & Schaefer Company for the erection of 2 cinder plants at Uceta, Fla.

BALTIMORE & OHIO.—Bids will be closed on May 26, for the construction of five water treating plants at Pittsburgh, Pa.

BALTIMORE & OHIO.—A contract has been awarded to Trainie Brothers & Haigley, Baltimore, Md., for the construction of a locomotive stripping shed at this company's Mt. Clare shops, to cost approximately \$37,000.

CHESAPEAKE & OHIO.—A contract has been awarded to Joseph E. Nelson & Sons for the construction of terminal facilities, including a roundhouse, machine shop, power house and storage house at Russell, Ky., reported in the *Railway Age* of March 28.

CHICAGO, BURLINGTON & QUINCY.—A contract has been awarded to the Kelly-Atkinson Construction Company, Chicago, for the construction of a viaduct over the tracks of the Burlington, the Chicago, Rock Island & Pacific, and the Atchison, Topeka & Santa Fe at Sixth street, St. Joseph, Mo. The contract for the construction of approaches to the viaduct was awarded to the Land Construction Company, St. Joseph, Mo. The viaduct will be of reinforced concrete and steel construction and will cost \$131,000, which will be divided among the railways and the city of St. Joseph.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—This company has closed bids for the construction of a scale house at Indianapolis, Ind.

CHICAGO, ROCK ISLAND & PACIFIC.—A contract has been awarded to the Railroad Water & Coal Handling Company, Chicago, for the construction of a water station, including a pumping plant, treating plant and pipe lines at Pratt, Kansas, to cost approximately \$75,000.

ERIE.—The North Jersey Water Commission will relocate four miles of the main line of this company's Greenwood Lake division north of Wanaque-Midvale, N. J., at a cost of approximately \$750,000. The work is made necessary by the flooding of the territory through which this line passes, following the construction of a dam built for water supply purposes.

FLORIDA EAST COAST.—A contract for the substructure for a double track, deck plate girder bridge, 50 ft. 8 in. long, at Arch Creek, Fla., has been awarded to the Charleston Engineering & Contracting Co., Charleston, S. C. The bridge will be constructed on concrete abutments on timber piles. The substructure involves an expenditure of approximately \$14,000. A contract for the superstructure has been awarded to the Virginia Bridge & Iron Company, Roanoke, Va.

ILLINOIS CENTRAL.—This company has awarded a contract to the Railroad Water & Coal Handling Company, Chicago, for the construction of a 300-ton reinforced concrete coaling station at Sionx City, Ia., to cost \$55,000.

ILLINOIS CENTRAL.—A contract has been awarded to Joseph E. Nelson & Sons, Chicago, for the construction of a water treating plant of 30,000 gallons per hour capacity at Sioux City, Ia. This company has also awarded a contract to Joseph E. Nelson & Sons for the erection of 8,000 tons of structural steel for its locomotive and car repair shops at Paducah, Ky. A contract has also been awarded to the same company for the construction of a 48-stall roundhouse and machine shop at Markham Yards, Chicago, reported in the *Railway Age* of January 10.

LOS ANGELES & SALT LAKE.—This company has been granted authority by the Railroad Commission of California to construct a viaduct over the Dominguez Creek in the Los Angeles Harbor district, application for which was reported in the *Railway Age* of May 9. The viaduct will cost \$535,000 to be divided between municipalities and the railway.

MISSOURI PACIFIC.—This company plans the construction of a passenger station at Corning, Ark., to cost \$25,000.

MISSOURI PACIFIC.—Bids will be closed on May 26 for the construction of a 10-stall roundhouse at Ewing avenue, St. Louis, Mo.

OWENSBORO, ROCKPORT & CHICAGO.—The Interstate Commerce Commission has made public a proposed report by Attorney-Examiner Boles and Engineer-Examiner Gray recommending a finding that the public convenience and necessity have not been shown to require the construction of the proposed line from Owensboro, Ky., to Elnora, Ind., 84 miles, for which this company has applied for a certificate.

PENNSYLVANIA.—A contract has been awarded to the John F. Casey Company, Pittsburgh, for widening the company's No. 4 tunnel at Dinsmore, Pa., and its No. 5 tunnel at Gould, Ohio.

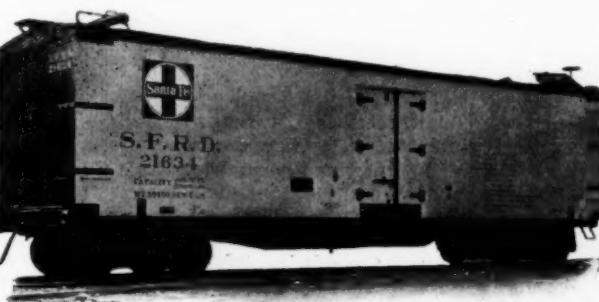
PENNSYLVANIA.—A contract has been awarded to the Ferguson & Edmundson Company, Pittsburgh, for grading and masonry on Section 4 of its Canton, Ohio, to Bayard cut-off, to cost approximately \$325,000. The work on this section had been previously awarded to another contractor.

QUEBEC EXTENSION.—This company has been authorized by the Interstate Commerce Commission to construct a 112-mile line from a connection with the Aroostook Valley Railroad at Washburn, Me., westward to the international boundary where it would connect with the Quebec Central. This company is controlled by the same interests which control the Aroostook Valley and it is planned to have it operated by the latter. The construction cost is estimated at \$3,621,000. Work must be begun by September 1, 1925, and completed by December 31, 1927.

READING.—A contract has been awarded to the Rapp Construction Company, Lebanon, Pa., for the construction of freight house and office building, including concrete foundations for a 35-ton fixed gantry crane, concrete driveways, drainage, etc., at Lebanon, Pa.

READING.—A contract has been awarded to the McMyler Interstate Company for the furnishing and installing of two 10-ton ore-unloading machines at Pier 14, Port Richmond, Philadelphia, Pa.

WABASH.—Bids were closed on May 21 for the construction of a storehouse at Landers Yards, Chicago.



A 35-Ton Refrigerator Built by the American Car & Foundry Company

Railway Financial News

ANDALUSIA, FLORIDA & GULF.—Abandonment.—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Galliver, Fla., to Falco, Ala., 25.5 miles.

ANN ARBOR.—Purchase of Stock by the Wabash.—The report was made current in New York on Monday that the Wabash had purchased 13,000 shares of the common and preferred stock of the Ann Arbor at a price of \$62.50 for the preferred and \$35 for the common. J. S. Bache, president of the Ann Arbor replied to these rumors by saying that "The report is not true at the present moment." A few days previously Mr. Bache had issued a statement that negotiations for the sale of the Ann Arbor were in prospect, but he declined to disclose the identity of the purchaser.

The Ann Arbor has outstanding \$4,000,000 of non-cumulative, 5 per cent preferred stock on which no dividends are being paid and \$3,250,000 common stock. It operates 294 miles of line extending from Toledo, Ohio, to Frankfort, Mich., with car ferries across Lake Michigan to Manistique, Menominee, Keweenaw and Manitowoc. It also owns all the capital stock of the Manistique & Lake Superior, which operates 48 miles of line in the upper peninsula of Michigan.

1924 Earnings.—Annual report for 1924 shows net income after charges of \$336,857 as compared with \$80,009 in 1923. Selected items from the income statement follow:

ANN ARBOR		
	1924	1923
		Increase or decrease
Railway operating revenues.....	\$5,532,186	\$5,602,575
Total operating expenses.....	\$4,290,879	\$4,543,000
Net revenue from operations.....	\$1,241,307	\$1,059,575
Railway tax accruals.....	289,401	253,040
Railway operating income.....	\$951,309	\$805,893
Net railway operating income.....	\$115,088	(Not shown)
Non-operating income.....		\$117,533
Gross income.....	\$1,066,397	\$923,425
Hire of freight cars, Dr. bal....	\$290,284	\$423,839
Interest on funded debt.....	380,229	358,436
Total deductions from gross income.....	\$729,540	\$843,417
Net income.....	\$336,857	\$80,009
		\$256,848

BALTIMORE & OHIO.—Equipment Trust.—The Interstate Commerce Commission has granted authority for the issuance of \$8,145,000 equipment trust certificates, series B, to be issued under an agreement dated May 1, 1925, and sold at not less than 96.68 per cent of par and accrued dividends. The equipment certificates mature in annual installments on May 1 in each of the years 1926 to 1940, both inclusive. The equipment consists of 2,000 box cars, 3,000 gondola cars, 5 dining cars and 20 coaches of a total approximate cost of \$10,876,837.

BANGOR & AROOSTOOK.—Valuation.—The Interstate Commerce Commission has issued a report finding the final value for rate-making purposes of the property owned and used for common carrier purposes as of June 30, 1916, to be \$21,030,000 and that of the property used but not owned to be \$3,850,000. The final value of the property of the Van Buren Bridge Company, operated by the carrier as agent, was found to be \$77,500. The Bangor & Aroostook had contended that the value of its property was \$35,000,000.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue \$1,021,000 of first and general mortgage 6 per cent bonds to reimburse the treasury.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—Equipment Notes.—The Interstate Commerce Commission has granted authority for the issuance of \$1,839,076 promissory notes payable to the order of the Pullman Car & Manufacturing Company and covering the purchase of 500 box cars and 250 hopper cars at a total approximate cost of \$1,403,875. Under the terms of the agreement, the railroad

will lease the equipment from the manufacturer for a term ending June 1, 1940.

CHICAGO, MILWAUKEE & ST. PAUL.—I. C. C. to Investigate.—The Interstate Commerce Commission has instituted a proceeding of inquiry and investigation, upon its own motion, into the "history, management, financial and other operations, accounts and practices" of the Chicago, Milwaukee & St. Paul, "in order to determine the manner and method in which the business of said company has been conducted with a view to the making of a report and such order or orders as may be appropriate upon the record." The company and H. E. Byram, Mark W. Potter and Edward J. Brundage, receivers, are made respondents, and the proceeding will be assigned for hearing at such times and places as the commission may hereafter direct. The announcement of this order follows some newspaper criticism of the manner in which a receivership of the road was asked and statements of two or three western Senators of their intention to urge a Congressional investigation after Congress meets in December.

Statement by President Budd.—President Ralph Budd has issued a statement reading as follows:

"The Great Northern is not responsible for the condition of other railroads in the northwest, except insofar as it has been able to continue in a reasonably satisfactory financial situation during a period when the return that the railroads have been permitted to earn has been far from adequate.

"There is no question but what the extension for the Chicago, Milwaukee & St. Paul Railway to the coast took a great deal of business from the Great Northern, nor is there any question but what the added transportation facilities constitute a burden which the traffic carried by the railroads has to bear.

"If Mr. Hill had bought the Milwaukee instead of the Burlington it is true that the Milwaukee would not have extended to the coast and would not have gone into receivership. It is true that Mr. Hill tried to purchase the Milwaukee, not because he thought it would be better than the Burlington is an associate for the lines he represented; viz.: the Great Northern and Northern Pacific, but because his associates did think it would be better and he yielded to their wishes. The stockholders of the Milwaukee, however, did not desire to sell and Mr. Hill's associates acquiesced in the purchase of the Burlington, which he had always favored.

"Just how Mr. Hill could have bought the Milwaukee when the owners refused to sell and just how it is figured that his failure to buy it makes him responsible for the Milwaukee's later bankruptcy is hard to figure out."

Statement by President Byram.—H. E. Byram, receiver and former president of the Chicago, Milwaukee & St. Paul Railway, has taken exception to charges he said newspapers had published that the receivership of the railway was purposely delayed until after Congress adjourned.

Mr. Byram said:

"The facts are that we approached the Government last Fall to see about financial assistance in the way of a loan, and were told the Government had no money to lend us. We considered it would be futile to follow with a formal request after we had been informed there was no money available.

"When we found the Government was unable to assist us by new loans we felt it could help us in a practical way by reducing the interest on outstanding notes. A petition for reduction in rate of interest charges by the Government on its loans to the railroads was before Congress. This proposition was one of the last things considered by Congress, and we could not tell until the session closed whether we would be granted the relief sought. When Congress adjourned without favorable action there was nothing left for the road to do but apply for receivership.

"The newspaper articles criticizing the railroad for the action taken also intimate that there is need for an investigation, and insinuate that there may be the makings of a first-class scandal in the affairs of the railroad. It is only fair to give those who are responsible for those unfounded reports advance notice that nothing but what is now known will be developed by an investigation.

"The present financial situation is due to a succession of unforeseen developments in the last 10 or 15 years. In addition to the economic disturbance incident to the World War—tremendous increases in prices of materials, wages and taxes—much business has been diverted to the Panama Canal and to the motor vehicles."

FORT WORTH & DENVER CITY.—Trackage Rights.—The Interstate Commerce Commission has granted a certificate authorizing the Fort Worth & Denver City, a subsidiary of the Colorado & Southern, to operate under trackage rights over the Chicago, Rock Island & Gulf between Fort Worth and Dallas, Tex. The agreement is for a term of 25 years and the Fort Worth & Denver City has the option to cancel the contract at the end of five years if desired. The certificate also authorizes the Fort Worth & Denver City to acquire the use of passenger facilities of the Union Terminal Company at Dallas and freight facilities of the Dallas Railway & Union Depot Company and the St. Louis Southwestern of Texas. In the case of the Union Terminal Company, the Fort Worth & Denver plans to become one of the proprietary companies, making a total of eight, or to enter into a tenancy contract. In the case of the Dallas Terminal & Union Depot Company and the St. Louis Southwestern, there will be a contract covering the handling of c. l. and l. c. l. freight on the team tracks of these companies. The agreement is to run for one year and thereafter until terminated by either party upon 90-days notice, the com-

(Continued on page 1308)

Annual Report

Chicago, Burlington & Quincy R. R. Co.—Seventy-First Annual Report

CHICAGO, January 2, 1925.

To the Stockholders of the Chicago, Burlington & Quincy Railroad Company:

The following is the report of your Board of Directors for the year ended December 31, 1924:

COMPARATIVE STATEMENT OF INCOME,
YEARS ENDED DECEMBER 31

Percent of Ry. Oper.	RAILWAY OPERATING REVENUES	Percent of Ry. Oper.
Revenue 1924	1923	Revenue
73.63 \$119,773,873.05	Freight \$126,433,098.13	73.82
16.30 26,522,641.75	Passenger 28,569,830.88	16.68
2.64 4,294,717.60	Mail 4,242,408.35	2.48
2.66 4,321,328.29	Express 4,442,387.40	2.59
3.05 4,961,483.55	All other transportation 4,412,431.25	2.58
1.52 2,467,916.41	Incidental 2,798,801.02	1.63
.20 332,917.33	Joint facility 371,703.77	.22
100.00	\$162,674,877.98	100.00
	Total railway operating revenues	
RAILWAY OPERATING EXPENSES		
11.93 \$19,413,916.56	Maintenance of way and structures	12.84
21.38 34,786,169.62	Maintenance of equipment	23.74
1.77 2,877,617.90	Traffic 2,815,004.27	1.65
35.54 57,810,257.64	Transportation 63,395,808.20	37.01
1.03 1,670,213.94	Miscellaneous operations 1,716,368.53	1.00
2.59 4,217,049.42	General 4,318,010.52	2.52
Cr. 56 Cr. 816,490.89	Transportation for investment — Credit	Cr. 35
73.74 \$119,958,734.19	Total railway operating expenses	78.41
26.26 \$42,716,143.79	Net revenue from railway operations	21.59
.... \$10,642,575.78	Railway tax accruals ..	....
.... 75,473.68	Uncollectible railway revenue	57,456.37
.... \$31,998,094.33	Railway operating income.	\$27,654,771.00
NON-OPERATING INCOME		
.... \$601,936.98	Hire of Equipment	\$593,161.45
.... 570,443.05	Joint facility rent income	612,915.71
.... 601,838.77	Miscellaneous rent income	730,307.43
.... 1,429,225.48	Dividends and miscellaneous interest	1,729,257.30
.... 83,024.26	Miscellaneous income	5,199.41
.... \$3,286,468.54	Total non-operating income	\$3,670,841.30
.... \$35,284,562.87	Gross Income	\$31,325,612.30
DEDUCTIONS FROM GROSS INCOME		
.... \$2,583,282.01	Hire of equipment	\$1,766,285.34
.... 1,845,080.03	Joint facility rents	1,728,996.02
.... 175,705.41	Miscellaneous rents	153,810.66
.... 8,641,439.46	Interest on funded debt	8,256,488.34
.... 28,521.91	Interest on unfunded debt	29,905.62
.... 108,705.25	Amortization of discount on funded debt	99,597.13
.... 2,000.00	Miscellaneous income charges .....	....
.... \$13,384,734.07	Total deductions from gross income	\$12,035,083.11
.... \$28,742,112.32	Net railway operating income	\$25,365,566.80
.... \$21,899,828.80	Net income	\$19,290,529.19
DISPOSITION OF NET INCOME		
.... \$293,930.48	Sinking funds	\$289,409.67
.... 17,083,765.00	Dividends	17,083,735.00
.... \$17,377,695.48	Total appropriations of income	\$17,373,144.67
.... \$4,522,133.32	Income balance transferred to profit and loss	\$1,917,384.52

Capitalization

CAPITAL STOCK

The Capital Stock outstanding remained without change during the year.

Of the total amount outstanding \$170,839,100
\$1,300 was represented by fractional stock scrip convertible in multiples of \$100, into full shares. This scrip is not entitled to vote or to receive dividends until so converted.

[ADVERTISEMENT]

A comparison of tonnage with 1923 by commodities handled shows the following:

Products of Agriculture.....	Increased	724,486 tons	8.31%
Animals and Products.....	Decreased	5,293 tons	0.17%
Products of Mines.....	Decreased	643,750 tons	3.54%
Products of Forest.....	Decreased	296,521 tons	11.27%
Manufactured Products.....	Decreased	487,910 tons	5.40%
Less-than-carload tonnage.....	Increased	3,679 tons	0.22%
Total tonnage.....	Decreased	705,309 tons	1.62%

A comparison of carloads shows:

Total Cars (all commodities) in 1924.....	1,392,061 cars
Total Cars (all commodities) in 1923.....	1,432,331 cars*

Decrease in 1924..... 40,270 cars 2.81%

*Due to change in the method of counting cars of grain milled in transit, the 1923 figures have been restated in order to place them on a comparative basis with those for 1924.

The decrease in passenger revenue was due to general business conditions prevailing throughout the year. We carried 417,412 less revenue passengers than in 1923 and the average distance each passenger was carried was 1.99 miles less than in 1923. Owing to the extensive development taking place in our suburban territory, there was a very substantial increase in suburban traffic. Our long haul traffic was not as heavy as during the preceding year and the short haul business is steadily decreasing due to the continual increase in the use of the automobile.

The relatively small decrease in express revenue was the result of increased economy on the part of the Express Company and continued co-operation on the part of the railroads. Had it not been for these factors the decrease in revenues would have been much more noticeable than that shown above. The increase in Other Transportation Revenues was distributed among a number of accounts.

Demurrage collected showed a heavy decrease compared with 1923 due in part to decreases in the volume of business handled, but more particularly to the fact that the consignees were much more prompt in releasing cars than has been the case at any time since the period of Federal Control.

The decrease in Other Incidental Operating Revenues was composed of a number of small decreases in the various items classed under this heading, practically all of which fluctuate with the freight and passenger business handled.

OPERATING STATISTICS:

Tons of revenue freight carried, 1924.....	42,778,294
Tons of revenue freight carried, 1923.....	43,483,603
Decrease.....	705,309 1.62%
Revenue tons one mile, 1924.....	12,287,747,806
Revenue tons one mile, 1923.....	12,690,384,346
Decrease.....	402,636,540 3.17%
Revenue tons per train mile, 1924.....	647.80
Revenue tons per train mile, 1923.....	611.68
Increase.....	36.12 5.91%
Revenue tons per loaded car, 1924.....	23.61
Revenue tons per loaded car, 1923.....	22.88
Increase.....	.73 3.19%
Average revenue per ton mile (cents), 1924.....	.975
Average revenue per ton mile (cents), 1923.....	.996
Decrease.....	.021 2.11%
Average distance hauled per revenue ton (miles), 1924	287.24
Average distance hauled per revenue ton (miles), 1923	291.84
Decrease.....	4.60 1.58%
Revenue passengers carried, 1924.....	18,084,733
Revenue passengers carried, 1923.....	18,502,145
Decrease.....	417,412 2.26%
Revenue passengers carried one mile, 1924.....	909,302,487
Revenue passengers carried one mile, 1923.....	967,096,799
Decrease.....	57,794,312 5.98%
Average distance carried, revenue passengers, 1924.....	50.28
Average distance carried, revenue passengers, 1923.....	52.27
Decrease.....	1.99 3.81%

EXPENDITURES (OPERATING):

Total operating expenses, 1924.....	\$119,958,734.19
Total operating expenses, 1923.....	134,290,378.56

Decrease..... \$14,331,644.37 10.67%

The reduction in operating expenses was the result of economy in all departments. Both the ratio of the cost of conducting transportation of 35.54% and the total operating ratio of 73.74% were the lowest for any year since 1917. The reduction shown in operating expense under 1923 was \$5,735,861.55 greater than the reduction suffered in operating revenues for the same period. The reduction was general in all classes of expenditure, a fair

example being the decrease attained in the cost of locomotive fuel which was reduced \$2,869,169.98 or 17.98% although the decrease in the average price of coal purchased was only 6.40% and the decrease in total train miles amounted to 4.73%.

EXPENDITURES (CAPITAL):

There was expended during the year 1924, chargeable to Capital Account:

For Road.....	\$8,002,726.31
For Equipment.....	1,531,150.68
For General.....	15,772.77
Total.....	\$9,549,649.76

INDUSTRIAL:

During the year 1924 the general industrial development of the territory served by the Burlington shows a healthy condition. There were constructed and extended during the year, industrial tracks as follows:

	New tracks	Extensions
On Lines East of the Missouri River.....	43	22
On Lines West of the Missouri River.....	22	4
Total.....	65	26

The number of new industrial leases made during the year also reflects a gradual expansion in business throughout our territory, there being a total of 391 new industrial leases executed and 275 new industries located. During the same period 25 existing industries made material additions to their plants.

In all our territory reports indicate improved business along commercial lines, with many new mercantile concerns established. The activity in new residential building, as well as building for business and commercial use, has been very pronounced. This is particularly true with respect to the development in our suburban territory.

AGRICULTURAL:

Higher prices for farm products resulted in continued improvement in the farmer's financial condition and greatly improved his outlook during the year. Very little land changed hands by purchase, but 3,405 inquiries for farming opportunities were received. Three hundred ninety-six persons filed on 156,865 acres of government land in the Newcastle, Buffalo, and Douglas land Districts, in Wyoming, as compared to 420 in 1923, 1,330 in 1922, and 1,800 in 1921. Six hundred forty-nine carloads of emigrants' effects were received on the Alliance, Casper, McCook, Sheridan and Sterling Divisions, as compared to 988 last year. A new booklet advertising opportunities in the Big Horn Basin, Wyoming, was issued and distributed; 19,000 follow-up letters and 23,000 pieces of literature were sent in response to inquiries.

Special attention was given to the promotion of diversified farming, the use of better seeds, dairy development, the value of pure bred sires, extension of corn growing in Wyoming, and sweet clover in the semi-arid sections, improvement of irrigated pastures and development of certified seed potato industry. Seven carloads of dairy cattle, two carloads of feeder cattle, 18 carloads of feed and seed, and 66 head of pure bred sires were purchased for farmers. The corn acreage of the Big Horn Basin was extended to 8,000 acres, as compared to 3,000 acres in 1923, and 1,500 acres in 1922; and a very successful Corn Show was held. This development has increased shipment of dressed turkeys from 500 pounds four years ago to 20 carloads in 1924, and there has been an increase in the number of lambs fed, and in the dairy industry. A sweet clover demonstration was made on a blow-out in the sand hills of Nebraska which prevented sand drifting on the tracks and increased pasture production.

A Pure Bred Dairy Sire Special train was operated in Nebraska, from which 31 pure bred dairy sires were traded to farmers for 31 scrubs, sight unseen, all trades even. This was a co-operative effort to eliminate the scrub. The railroad furnished a twelve-car special train to carry the live stock, exhibits, and speakers. The State Agricultural College furnished educational exhibits and lecturers. The live stock breeders of the state contributed the pure bred sires, conservatively valued at \$6,000.00, receiving for their pure breds, \$609.85, the selling price of the scrubs on the market, and charged off the difference in this unequal trade to advertising and promotion. One trade was made at each of 31 towns; 71,000 people attended the demonstrations and saw the exhibits. Fifty-four written requests for pure bred dairy sires, and orders for six carloads of dairy cows were secured. Special bulletins showing the value of the pure bred sire were issued. One hundred thousand pieces of literature were distributed. Over 18,000 column inches of newspaper publicity on the campaign was collected.

A follow-up trip was made to inspect the fifty-eight pure bred sires traded to Colorado farmers from the Pure Bred Sire Special train operated in 1923. It was found that all of the sires were being exceptionally well cared for, and that a great deal of community interest has been aroused in the production of a better quality of live stock by the use of these pure bred sires.

By order of the Board of Directors.

HALE HOLDEN,
President.

Colorado & Southern Ry. Co.—Twenty-Sixth Annual Report

CHICAGO, January 2, 1925.

To the Stockholders of the Colorado and Southern Railway Company:

Herewith is submitted the Twenty-Sixth Annual Report of your Board of Directors for the year ended December 31, 1924, setting forth composite income statement and statistics of operation for Colorado and Southern Lines included in this report. Balance sheets, income account and other statements of the several companies comprising the Colorado and Southern Lines are shown separately in the report of the Comptroller.

COMPARATIVE STATEMENT OF INCOME, YEARS ENDED DECEMBER 31,

Percent of Ry. Oper. Rev.	RAILWAY OPERATING REVENUES		Percent of Ry. Oper. Rev.
1924	1923	1924	1923
75.90	\$19,694,843.42	Freight	\$17,697,340.36
17.02	4,415,840.05	Passenger	4,553,981.88
1.56	404,527.87	Mail	392,835.95
1.83	474,000.55	Express	417,374.52
2.41	625,781.98	All other transportation	500,771.89
1.14	297,183.38	Incidental	295,847.76
.14	34,553.54	Joint facility	2,067.32
100.00	\$25,946,730.79	Total railway operating revenues	\$23,860,219.68
		RAILWAY OPERATING EXPENSES	
10.96	\$2,844,059.39	Maintenance of way and structures	\$3,053,896.37
19.33	5,015,677.61	Maintenance of equipment	5,738,076.82
1.30	337,844.24	Traffic	317,395.93
32.69	8,478,912.80	Transportation	8,493,001.17
.64	166,692.02	Miscellaneous operations	163,594.24
3.68	955,001.39	General	951,562.89
.11 Cr.	28,018.36	Transportation for investment—Cr.	18,062.90
68.49	\$17,770,169.09	Total railway operating expenses	\$18,699,464.52
31.51	\$8,176,561.70	Net revenue from railway operations	\$5,160,755.16
		RAILWAY OPERATING INCOME	
	\$1,512,347.14	Railway tax accruals	\$1,321,188.03
	9,828.48	Uncollectible railway revenue	12,697.92
	\$6,654,386.08	Railway operating income	\$3,826,869.21
		NON-OPERATING INCOME	
	\$281,456.02	Hire of equipment	\$542,805.80
	61,014.39	Joint facility rent income	55,990.04
	89,091.25	Miscellaneous rent income	95,370.83
	617,954.26	Dividends and miscellaneous interest	586,397.39
	1,708.92	Miscellaneous income	2,367.56
	\$1,051,224.84	Total non-operating income	\$1,272,931.62
	\$7,705,610.92	Gross income	\$5,099,800.83
		DEDUCTIONS FROM GROSS INCOME	
	\$668,198.77	Hire of equipment	\$252,606.68
	107,894.26	Joint facility rents	97,790.18
	21,072.44	Miscellaneous rents	20,493.14
	2,698,054.61	Interest on funded debt	2,707,964.95
	9,365.19	Interest on unfunded debt	8,540.72
	32,926.00	Amortization of discount on funded debt	33,424.60
	112,128.61	Miscellaneous income charges	54,440.89
	\$3,649,639.88	Total deductions from gross income	\$3,175,255.16
	\$6,220,763.46	Net railway operating income	\$4,065,274.19
	\$4,055,971.04	Net income	\$1,924,545.67
		DISPOSITION OF NET INCOME	
	\$680,311.04	Dividends	\$680,537.04
	\$680,311.04	Total appropriations of income	\$680,537.04
	\$3,375,660.00	Income balance	\$1,244,008.63

General Operations

REVENUES:

Total Operating Revenues for 1924..... \$25,946,730.79
Total Operating Revenues for 1923..... 23,860,219.68

Increase \$2,086,511.11— 8.74%

This increase was made up as follows:

Freight	Increased	\$1,997,503.06	—11.29%
Passenger	Decreased	138,141.83	—3.03%
Mail	Increased	11,691.92	—2.98%
Express	Increased	56,626.03	—13.57%
Switching	Increased	22,188.60	—5.74%
Other transportation	Increased	102,821.49	—90.34%
Incidental operating	Increased	33,821.84	—11.35%

Net Increase \$2,086,511.11— 8.74%

The increase in freight revenue is due principally to general improvements in business conditions during 1924 which prevailed throughout this district, brought about particularly in the Southern

territory by the production of splendid crops of all kinds, which was made possible by good weather conditions that were seasonable throughout the year, whereas in the previous year the net earnings were greatly reduced on account of diversion of a normal flow of traffic due to the results of flood conditions existing throughout the latter half of the year. There were no general reductions in freight rates during the year, although such adjustments as were made on specific commodities resulted in almost every case in reductions.

The decrease in passenger revenues is due to a general falling off in short haul passenger business since the statistical records show a decrease in passengers carried, but a considerable increase in the average distance each revenue passenger was carried.

A comparison of tonnage by commodities with 1923 shows a net increase as follows:

Farm Products	Increased	313,896 tons	—26.81%
Animals and Products	Increased	14,260 tons	—5.43%
Mine Products	Increased	8,347 tons	—23%
Forest Products	Increased	49,984 tons	—15.18%
Manufactured Products	Increased	193,696 tons	—10.54%
Less-than-carload Tonnage	Increased	2,385 tons	—1.60%
Total tonnage	Increased	582,568 tons	—7.81%

A comparison of carloads shows:

Total cars (all commodities) in 1924.....	258,883 cars
Total cars (all commodities) in 1923.....	233,405 cars

Increase in 1924..... 25,478 cars—10.92%

The increase in tonnage of farm products handled is due to generally improved agricultural production, principally of cotton and cottonseed products, wheat and other grain. The cotton ginnings in the territory served by the southern portion of these lines show an increase over the previous year of 55% and the production of other crops was above normal.

EXPENDITURES (OPERATING):

Total operating expenses—1924.....	\$17,770,169.09
Total operating expenses—1923.....	18,699,464.52

Decrease \$929,295.43— 4.97%

The decrease in operating expenses was principally in maintenance of equipment and maintenance of way expenses. Maintenance of equipment expenditures in 1923 were considerably above normal because of long continued strike conditions in 1922, necessitating extraordinary expenditures in 1923 to restore equipment to standard condition. Maintenance of way expenditures in 1923 were generally heavier owing to unusual flood conditions prevailing in that year.

Transportation and traffic expenses increased on account of an increased volume of business handled.

Expenses of general and miscellaneous operations were practically normal with the previous year.

The operating ratio was 68.49% compared with 78.37% in 1923, and 76.28% in 1922.

Net income of the several companies as combined in the income statement shows an encouraging increase over the previous year but after payment of the regular dividends upon the preferred shares of the Colorado and Southern Railway Company, the remainder has been credited to surplus accounts, in keeping with the policy of the management to strengthen reserves and improve the credit of the several Companies. Attention has heretofore been directed to substantial losses in Capital Account which the Company has suffered, such as the loss of investments, through foreclosure, in the Colorado Midland Railway Company and Colorado Springs and Cripple Creek District Railway Company, abandonment of unproductive mileage and from other sources. Increasing competition by motor bus and private automobile, using the adjacent hard roads between Denver and Boulder, Colorado, is creating serious doubt whether the operations of the Denver and Interurban Railroad Company can be longer continued. The results of the operations of the property of the Trinity and Brazos Valley Railway Company by the Receiver thereof do not yet afford a basis for the reorganization of that property.

Plans are under development to extend the operations of the Texas lines into the City of Dallas and into the South Plains territory in Western Texas, thereby reinforcing capital account and strengthening the earning power of the Company. The management believes that it will continue to be advisable for the present to provide for additions of this character, as well as for betterments and improvements to property account by the use of surplus income so far as available rather than by the further issue of capital. The approaching maturity of the First Mortgage Bonds and the uncertainty of the result of the Federal Valuation which is approaching completion furnish additional reasons for a conservative course in the use of surplus earnings.

By order of the Board of Directors.

HALE HOLDEN, President.

Minneapolis, St. Paul & Sault Ste. Marie Railway Co., Wisconsin Central Railway Company

Annual Report for the Fiscal Year Ended December 31, 1924

To the Stockholders:

Submitted herewith is a report for the fiscal year ended December 31, 1924.

The Gross Earnings, Operating Expenses, Fixed Charges, Surplus, etc., are as shown in the following condensed statement:

	Soo Line	Wis. Cent. Ry.	System
Gross Earnings	\$28,724,693.56	\$19,220,665.97	\$47,945,359.53
Operating Expenses	21,261,302.58	15,552,552.05	36,813,854.63
Net Earnings.....	\$7,463,390.98	\$3,668,113.92	\$11,131,504.90
Income from Other Sources.....	808,923.61	318,094.46	1,127,018.07
Total Income.....	\$8,272,314.59	\$3,986,208.38	\$12,258,522.97
Fixed Charges, Taxes, etc... .	7,427,873.09	4,809,824.39	12,237,697.48
Addition to Surplus.....	\$844,441.50	D \$823,616.01	\$20,825.49

Freight revenue for the system during 1924 was \$37,349,104.76, a decrease of \$255,084.98, or .68%, compared with previous year, while the number of tons of revenue freight carried one mile showed a decrease of 3.1%.

During the first seven months of 1924, freight revenue decreased \$2,738,408 compared with the same period in 1923. The failure of the grain crop of 1923, and resulting contraction in many lines of business during the early months of 1924, seriously affected the amount of traffic. During the period, there were many bank and commercial failures throughout the Northwest, and business conditions generally were very unsatisfactory. During the last five months of 1924, freight revenue increased \$2,483,323, compared with the same period in 1923. The grain crop of 1924 was excellent, and the grain traffic movement showed a large increase. This condition crowded into the last five months of the year the movement of 50.45% of the total revenue ton miles moved for the year, which tonnage resulted in 50.19% of the total freight revenue. This unbalanced movement was not conducive to operating economies. During the year 1924, there was a decrease of \$627,645.04 in earnings on iron ore shipped from the Cuyuna Range. Business conditions in the steel industry account for this decrease. Shipments from the Gogebic Range were practically the same as in 1923.

Passenger revenue was \$6,575,906.06, a decrease of \$1,090,851.53, or 14.2%, compared with previous year. The larger part of this was in local passenger revenue, directly attributable to bus service and the use of privately-owned automobiles. To offset this loss, passenger service was reduced wherever possible. Had the reductions, which were made during the year, been in effect throughout the year, there would have been a saving of 195,966 passenger train miles. As it was, there was a saving of 71,294 passenger train miles, or 1.4%.

The outstanding indebtedness was increased during the year as follows:

Minneapolis, St. Paul & Sault Ste. Marie Railway Company:	
Leased Line Certificates.....	\$6,300.00
Twenty-five-year Gold Notes.....	3,375,300.00
Two-year 5% Gold Notes.....	1,500,000.00
Wisconsin Central Railway Company:	
Three-year Secured Gold Notes.....	6,000,000.00

Total Increase \$10,881,600.00

The outstanding indebtedness was decreased during the year as follows:

Minneapolis, St. Paul & Sault Ste. Marie Railway Company:	
First Refunding Mortgage Bonds, Series "A".....	\$65,000.00
Equipment Trust Obligations.....	529,266.47
Two-year 5½% Gold Notes.....	2,805,000.00
Wisconsin Central Railway Company:	
First General Mortgage Bonds.....	186,000.00
Marshfield & Southeastern Division P. M. Bonds.....	14,000.00
Equipment Trust Obligations.....	156,733.53

Total Decrease \$3,756,000.00

Net Increase During the Year..... \$7,125,600.00

On January 17, 1924, the Minneapolis, St. Paul & Sault Ste. Marie Railway Company entered into an agreement with a committee representing the minority stockholders of the Wisconsin Central Railway Company whereby the Minneapolis, St. Paul & Sault Ste. Marie Railway Company agreed to buy the outstanding minority common stock of the Wisconsin Central Railway Company at a price of \$43.25 per share, and to issue in payment therefor its 25-year 5½% Gold Notes at par, and to pledge as security for these notes all of the shares of stock received. This agreement required the deposit of 95% of the outstanding stock with certain trustees prior to April 1, 1924, in order to make the agreement operative. The required number of shares having been deposited, the Minneapolis, St. Paul & Sault Ste. Marie Railway Company entered into a Trust Agreement, as of March 1, 1924, with the Bankers Trust Company of New York, as Trustee, pursuant to which it issued \$3,375,300, par value, 25-year 5½% Gold Notes in

exchange for \$7,808,800, par value of stock so deposited. The Trust Agreement provides for the redemption of these notes at face value in fixed amounts annually, beginning March 1, 1930. The total outstanding common stock of the Wisconsin Central Railway Company consists of 161,263 shares, of which the Minneapolis, St. Paul & Sault Ste. Marie Railway Company now owns 159,088 shares.

On April 15, 1924, the Wisconsin Central Railway Company entered into a Trust Agreement with The Equitable Trust Company of New York, as Trustee, under which it issued and sold \$6,000,000, par value, 3-year 5½% Secured Gold Notes, secured by a pledge of \$8,000,000, par value, Wisconsin Central Railway Company First and Refunding Mortgage Bonds. These bonds had been issued and placed in the treasury of the company from time to time as 4% bonds, the rate of interest specified in the mortgage. This rate of interest was raised at 5% by the joint and several agreement of the Wisconsin Central Railway Company and the Minneapolis, St. Paul & Sault Ste. Marie Railway Company, placed on the bonds pursuant to a contract to that effect which had been entered into on April 1, 1917, between the two companies and the Empire Trust Company of New York, as Trustee. Payment of principal and interest of the \$6,000,000 notes secured by the bonds was guaranteed by the Minneapolis, St. Paul & Sault Ste. Marie Railway Company. These notes were issued for the purpose of providing the Wisconsin Central Railway Company with funds with which to pay for an extension of its ore dock at Ashland, Wis., and to meet the cost of various additions and betterments to its property, and to repay advances which it had received from the Minneapolis, St. Paul & Sault Ste. Marie Railway Company.

During the year, there was expended for Additions and Betterments to Road a net amount of \$1,977,283.98. There was also expended for Additions and Betterments to Equipment a net amount of \$641,100.09.

In 1917, the Wisconsin Central Railway Company completed a fireproof reinforced concrete ore dock at Ashland, Wis., having a storage capacity of 52,500 tons. In order to handle the increased ore tonnage offered to it, the Wisconsin Central Railway Company, in February, 1924, began the construction of an extension of the above dock at an estimated cost of \$1,400,000.00, to be completed about April 1, 1925. This will double the capacity of the dock and give a total storage capacity of 105,000 tons. There was expended \$1,211,766.89 during 1924, on this project.

During the year, the Interstate Commerce Commission issued its tentative valuation as of June 30, 1916, of the property and assets of the Minneapolis, St. Paul & Sault Ste. Marie Railway Company used for transportation purposes. The tentative valuation as of that date was placed by the Commission at \$104,674,000.00. On the basis of the Commission's tentative valuation, plus the value of subsequent additions and betterments, and property not used for transportation purposes, the company's assets exceed the par value of its outstanding stock and bonds and other liabilities by about \$6,000,000.00. The company contends, however, that it is entitled to an increase in the tentative valuation made by the Interstate Commerce Commission and has filed its protest to that effect with the Commission. The tentative valuation of the property of the Wisconsin Central Railway Company and the Central Terminal Railway Company was served on these Companies as this report was going to press, too late for analysis and comment herein. The aggregate cost to the two companies of the valuation work up to December 31, 1924, amounted to \$444,911.62.

The large crop of 1924 and the high prices obtained for the same, have made a decided improvement in conditions along the Soo Line. The repeated crop failures of previous years, on top of low prices obtained for what was harvested, caused a very severe business and agricultural depression in our territory. Many farmers were so discouraged that they made no effort to retain their farms, so that the number of foreclosures and vacant farms was constantly increasing. However, these conditions have changed as a result of the 1924 crop, and business is now improving. Farmers were able, in many cases, to meet their past due interest and taxes, and to pay their bills to merchants; and merchants in turn were able to pay their bills and again go into the market for goods. During this crisis in our agricultural territory, there has been a heavy increase in diversification, so that in a few years the conditions in the Northwest will become more nearly stable, and less dependent upon small grain crops. If the harvest of 1925 should be a normal one, I believe that the agricultural and business conditions in the Northwest will have definitely turned the corner.

Respectfully submitted,
C. T. JAFFRAY,
President.

Pere Marquette Railway Company

Detroit, Mich., March 31, 1925.

To the Stockholders:

The Board of Directors respectfully submit herewith their report of the affairs of the Pere Marquette Railway Company for the fiscal year ended December 31, 1924.

Income Account

	Year Ended December 31, 1924	Year Ended December 31, 1923	Increase or Decrease
Operating Revenues	\$41,797,914.64	\$45,965,736.78	-\$4,167,822.14
Operating Expenses	30,962,930.01	34,871,096.75	-3,908,166.74
Net Operating Revenue	\$10,834,984.63	\$11,094,640.03	-\$259,655.40
Railway Tax Accruals	\$2,028,020.37	\$1,848,821.55	\$179,198.82
Uncollectible Railway Revenues	7,803.49	13,603.70	-\$5,800.21
Equipment Rents—Net	919,635.30	1,625,249.20	-705,613.90
Joint Facility Rents—Net	678,697.29	520,593.44	158,103.85
Total	\$3,634,156.45	\$4,008,267.89	-\$374,111.44
Net Railway Operating Income	\$7,200,828.18	\$7,086,372.14	\$114,456.04
Other Income—Net	\$406,052.84	\$357,191.22	\$48,861.62
Balance Before Deduction of Interest	\$7,606,881.02	\$7,443,563.36	\$163,317.66
Interest on Bonds	\$2,197,960.00	\$1,664,973.89	\$532,986.11
Interest on Equipment Notes	445,246.17	485,881.25	-\$40,635.08
Miscellaneous Interest	28,652.58	89,898.14	-61,245.56
Total Interest Accruals	\$2,671,858.75	\$2,240,753.28	\$431,105.47
Surplus	\$4,935,022.27	\$5,202,810.08	-\$267,787.81
Ratio of Operating Expenses to Operating Revenues	74.08	75.86	-1.78
Ratio of Taxes to Operating Revenues	4.85	4.03	.82
Total	78.93	79.89	-.96

Long Term Debt

The following changes in Long Term Debt occurred during the year ended December 31, 1924:

Temporary Equipment 6% Gold Notes Nos. 20 to 30, inclusive, for \$64,800 each, and Nos. 46 to 56, inclusive, for \$159,700 each, aggregating \$2,469,500 issued under Equipment Trust Agreement No. 63, dated January 15, 1920, were retired by the issuance of Definitive Notes (stamped) aggregating \$2,464,000, and the payment of \$5,500 in cash. The Definitive Notes are for \$1,000 each, mature serially from January 15, 1925, to January 15, 1935.

Temporary Equipment 6% Notes Nos. 19 and 45 for \$64,800 and \$159,700, respectively, and Definitive Notes Nos. 2019 to 2466, inclusive, for \$1,000 each, a total of \$672,500, were retired at maturity January 15, 1924, by cash payment made to Guaranty Trust Company of New York, Trustee.

During the year the Company obtained the authentication and delivery to it by Bankers Trust Company as corporate trustee of the First Mortgage of the Company of \$6,064,000 principal amount of its First Mortgage 5% Gold Bonds, Series A, to cover reimbursement for 80% of the expenditures for Additions and Betterments during the period July 1, 1922 to June 30, 1923, inclusive. These bonds have not been sold, but are being held in the Treasury for future needs.

A Mortgage of \$6,000.00 held by Northwestern Mutual Life Insurance Company on certain land purchased at Erie, Mich., for yard purposes, was discharged during the year.

Securities Acquired and Disposition of Securities Owned

During the year the Company advanced an additional amount of \$31,438.27 to the Flint Belt Railroad Company, making a total of \$735,117.44 advanced to December 31, 1924, including interest amounting to \$21,679.17 on advances prior to June 5, 1923, the date on which the Flint Belt commenced operations. Against these advances the Flint Belt has issued to the Pere Marquette Railway Company at par its capital stock to the face amount of \$692,600 leaving a balance of \$42,517.44 of indebtedness to this Company on account of such advances for which stock of Flint Belt Railroad Company has not been issued.

On account of the termination on September 14, 1924, of the corporate existence of the Grand Rapids, Kalkaska and South-eastern Railroad Company, a subsidiary of the Pere Marquette Railway Company, the capital stock of that Company which was carried on the books of the Pere Marquette at a nominal valuation of \$1.00 was written out of the accounts.

On January 1, 1924, the Pere Marquette Railway Company owned \$3,000,000 face amount of United States Government securities, which were carried on the books at cost, viz.: \$3,004,452.84. During the year the Company purchased at par additional Government securities to the face amount of \$2,000,000, and sold \$4,500,000 face amount for \$4,518,437.50. The profit on these transactions during the year amounted to \$13,984.66, and at De-

cember 31, 1924, the Company had in its Treasury \$500,000 face amount of United States Treasury 4% Certificates which mature on March 15, 1925.

A balance of \$55,000 on note of George B. Yerkes due May 1, 1924, given the Company in connection with the purchase by him of certain property at Detroit, was paid during the year.

Dividends

Quarterly dividends at the rate of 1 1/4% were regularly paid on the Prior Preference Stock and the Preferred Stock. These payments were made out of surplus and amounted to \$560,000 on the Prior Preference and \$621,450 on the Preferred.

Quarterly dividends at the rate of 1% were also regularly paid on the Common Stock. These payments were likewise made out of surplus and amounted to \$1,801,840.

Additions and Betterments

During the year ended December 31, 1924, charges amounting to \$2,303,281.38 were made to "Investment in Road" and \$2,255,746.44 to "Investment in Equipment"; the net charge to "Investment in Road and Equipment" for the year being \$4,559,027.82.

Included in the charges to "Investment in Equipment" for the year ended December 31, 1924, are the following items, viz.:

\$923,955.37, balance of cost of 300 refrigerator cars built during the years 1923 and 1924 at the Pere Marquette Railway Company Shops, \$1,529.48 having been expended during the year 1923. \$1,174,829.83, balance of cost of 2 car ferries (Numbers 21 and 22) contracted for with the Manitowoc Shipbuilding Corporation, August 1, 1923, \$402,850.68 having been expended during the year 1923. Car Ferry No. 21 was put in service May 31, 1924; Car Ferry No. 22, September 22, 1924.

\$266,907.03, representing the increase in the aggregate ledger value of 335 units of freight equipment and 2 units of work equipment rebuilt during the year, the cost of which constituted the major portion of the value as renewed. This equipment was re-tired in the accounts according to accounting requirements of the Interstate Commerce Commission in order that it might be set up in the records at its appraised value after rebuilding. The aggregate ledger value of the retired freight equipment units was \$193,086.63; the appraised value after rebuilding aggregated \$458,326.96. The aggregate ledger value of the retired work equipment units was \$617.95; the appraised value after rebuilding aggregated \$2,284.65.

The following important additions and betterments were made to the Roadway Account, viz.:

MC GREW, MICHIGAN.

A purchase of 18.68 acres of land was made at this location at a total cost of \$47,063.25, this land being needed for new yard facilities.

ERIE, MICHIGAN.

The new freight terminal south of Erie, Mich., known as Ottawa Yard, was put into operation as a whole in November, 1924, a portion of the yard having been in service for south-bound business throughout the year. At the close of the year 98% of the improvements had been completed, at a cost of \$1,830,566.06, in addition to the cost of 1,213.87 acres of land purchased in 1923 for \$743,505.64. Freight main tracks giving access to this terminal were constructed, as described under "Roadway and Track."

WYOMING, MICHIGAN.

The additional shop and terminal facilities at this point, begun in 1923, were completed at a total cost of \$1,845,851.39.

DETROIT, MICHIGAN.

The engine terminal and coach yard at 21st Street, Detroit, constructed by the Pere Marquette Railway Company at the expense of the Pennsylvania Railroad Company, and for the joint use of those companies and the Wabash Railway Company, were completed and put in service during the year.

New Equipment

During the year ended December 31, 1924, the following new equipment was purchased, received and placed in service, viz.:

From	Numbers	Description
Manitowoc Shipbuilding Corp.	21 and 22	2 Car Ferries

The following equipment was constructed or converted at Pere Marquette Railway Shops:

Units	Car No.
390 Refrigerator Cars	25000 to 25299, inclusive
3 Cabooses	A-700 to A-702, inclusive
12 Cinder Dump Cars	CD-72, 75, 81, 82, 84, 86, 88, 95, 99, 100, 104 and 105
3 Tool Cars	T-162, 172 and 175
1 Water Supply Car	WS-59
1 Shop Car	SC-424

By Order of the Board of Directors,

EDWARD N. BROWN,
Chairman.

FRANK H. ALFRED
President.

(Continued from page 1302)

pensation to be fixed on the basis of cars handled. By operating into Dallas, the Fort Worth & Denver City expects to increase its annual freight and passenger revenues by at least \$990,000 and \$244,550 respectively and to effect economies at Fort Worth by relieving congested interchange conditions which at present involve an average delay of eight hours or more.

GREAT NORTHERN.—*Equipment Trusts Sold.*—J. P. Morgan & Co., the First National Bank of New York, and the National City Company have sold \$4,250,000 Great Northern Equipment trust certificates, series D, at a price to yield 4 1/4 per cent. Interstate Commerce Commission authority covering this issue was reported in the *Railway Age* of January 17, 1925.

GULF COAST LINES.—*Tentative Valuation.*—The Interstate Commerce Commission has issued tentative valuation reports placing the final value for rate-making purposes of the property owned and used by the Beaumont, Sour Lake & Western as of 1919 at \$2,202,474; that of the New Iberia & Northern as of 1918 as \$796,025 for the property owned and \$1,571,290 for the property used; and that of the Orange & Northwestern as of 1919 at \$842,706 for the property owned and \$886,150 for the property used.

LEHIGH & NEW ENGLAND.—1924 *Earnings.* Annual report for 1924 shows net income after charges of \$859,980 as compared with \$875,895 in 1923. Selected items from the income statement follow:

LEHIGH & NEW ENGLAND		
	1924	1923
Average mileage operated.....	219.45	219.38
Railway operating revenues..	\$5,413,879	\$5,843,136
Total operating expenses.....	\$4,138,723	\$4,468,245
Operating ratio	76.45	76.47
Net revenue from operations...	\$1,275,155	\$1,374,891
Railway tax accruals.....	204,842	224,979
Railway operating income.....	\$1,069,546	\$1,149,814
Hire of freight cars, Cr. bal.	\$171,791	\$197,017
Net railway operating income..	\$253,698	(Not shown)
Non-operating income		\$258,361
Gross income	\$1,323,244	\$1,408,175
Interest on funded debt....	\$317,303	\$297,963
Total deductions from gross income	\$463,264	\$432,280
Net income	\$859,980	\$975,895
Income applied to sinking and other reserve funds.....	\$9,698	\$8,910
Surplus for year carried to profit and loss.....	\$850,283	\$966,985
		—\$116,702

LONG ISLAND.—*Equipment Trust.*—The Interstate Commerce Commission has granted authority for the issuance of \$1,095,000 equipment trust certificates, series G, maturing in annual installments to January 1, 1940, to be sold at not less than 99.25 per cent of par and accrued dividends. These applications cover the purchase of 10 passenger locomotives and 40 electric motor passenger cars of a total approximate cost of \$1,380,030.

MINNEAPOLIS & ST. LOUIS.—*Receivers' Certificate.*—The receiver has applied to the Interstate Commerce Commission for authority to issue \$1,000,000 of six-month 7 per cent receivers' certificates of indebtedness.

MISSOURI PACIFIC.—*Bonds.*—The Interstate Commerce Commission has authorized the authentication and delivery of \$35,317,000 of first and refunding mortgage 6 per cent bonds, of which \$25,000,000 are to be sold at not less than 96 1/4.

NEW YORK CENTRAL LINES.—*Equipment Trust Certificates.*—The Interstate Commerce Commission has exercised its authority to require an increase in the price at which it was proposed to sell an issue of \$10,530,000 of 4 1/4 per cent equipment trust certificates to J. P. Morgan & Co., by authorizing their sale at an average price of not less than 96.89 per cent of par and accrued dividends, on which basis the average annual cost to the applicants will be approximately 5 per cent, instead of at not less than 96.43, or a basis of approximately 5.077 per cent, the price at which the application said it was expected to make the sale. The report of the commission, by Division 4, Commissioners Meyer, Eastman and Woodlock, gives no statement of the reasons for this requirement.

These equipment trusts cover equipment of an approximately cost of \$14,179,386. Commissioner Eastman, in a dissenting opinion, said:

An unhealthy situation exists with respect to the marketing of railroad securities. In the case of the more important railroads this business is very largely monopolized by J. P. Morgan & Co. and Kuhn, Loeb & Co., of New York City. For example, the applicant in this proceeding, the New York Central, markets all of its issues as a matter of course through J. P. Morgan & Co. On the other hand, the Pennsylvania markets all of its issues as a matter of course through Kuhn, Loeb & Co. Nor does the reason for this situation lie in the fact that these are the only banking concerns able to handle the business. On the contrary, there are now several banking houses that are well equipped to handle issues of railroad securities, or at least issues of ordinary size, and which as a matter of fact do market similar issues of the securities of industrial corporations.

There is much to be said in favor of the plan under which a railroad company uses as its fiscal agent a single banking house and does not resort, in marketing its securities, to any form of competitive bidding. In my opinion, however, these arguments have much less weight, if they have weight at all, in the case of securities, like equipment trust obligations, which are practically standardized and as to which the credit of the particular carrier is of lesser importance. So far as at least such securities are concerned, I am convinced that resort to competitive bidding is entirely practicable and would tend to bring about healthier financial conditions much less open to legitimate attack.

We have never heretofore attempted directly or indirectly to force competitive bidding in the case of equipment trust obligations, but have been content with fixing a minimum price for the issue which seemed to be reasonable. In the case now before us, however, we have an excellent opportunity for somewhat different procedure. The applicant is a carrier of strong financial standing, and there is nothing unusual about the equipment trust certificates which it proposes to become sponsor for. The issue, which is of moderate size, plainly offers a splendid field for competitive bidding. Moreover, the minimum price which the applicant proposes, and which it is unwilling to modify voluntarily, is out of line with prevailing market prices, a fact which is recognized in the majority report under which the minimum price is fixed at a little higher level. The circumstances fully justify us, I believe, in presenting these alternatives to the applicant: (1) Sale through J. P. Morgan & Co. at a minimum price closely approximating the market level; or (2) if applicant is unwilling to adopt such an alternative, sale to the highest qualified bidder after competitive bids have been publicly advertised for and received. I should be in favor of requiring competitive bidding without any other alternative, except that I doubt our power to do this. We have power to fix a reasonable minimum price, and, if our conclusion as to such price is questioned, I believe that we also have power to require the matter to be determined by the practical test of competitive bidding.

There have been other cases, no doubt, in which a different carrier and a different fiscal agent were involved and where such alternatives might well have been presented, and my selection of this particular case is not intended as discrimination against either this applicant or its fiscal agent. The situation is one where a start in another direction ought to be made in the public interest, and the circumstances of this case offer an unusually good opportunity for such a start.

NORFOLK SOUTHERN.—*New Directors.*—M. S. Hawkins of Norfolk, Va., and Herbert L. Williams of Lynchburg, have been elected directors succeeding Marsden J. Perry, Marsden J. Perry, Jr., of Providence, R. I., and John T. Terry of New York, resigned. These changes are in connection with the recent purchase by Ernest Williams of Mr. Perry's interest in the property.

SEABOARD AIR LINE.—*Bonds.*—The Interstate Commerce Commission has authorized the authentication and delivery of \$2,294,000 of first and consolidated mortgage 6 per cent bonds to be pledged as collateral for notes.

SOUTHERN PACIFIC COMPANY.—*Will Assist Connecting Lines.*—The Southern Pacific has announced through William Sproule, its president, that arrangements have been made with Charles Moran, president of the Nevada-California-Oregon to aid him in securing the money needed to carry out his plan of changing that road from narrow gage to standard gage. Mr. Sproule also announces that the Southern Pacific Company has completed negotiations with Robert E. Strahorn, president of the Oregon, California & Eastern, under which funds will be advanced to him to aid in the construction of the line of his company from Klamath Falls to connection with the Nevada-California-Oregon. Both arrangements are subject to the approval of the Interstate Commerce Commission. Mr. Sproule's statement said with reference to the Nevada-California-Oregon that "the arrangement, if approved, will give the Southern Pacific a substantial interest in the Nevada-California-Oregon, which will be rebuilt as a broad-gage line under Southern Pacific auspices. Its distance is 156 miles between Lakeview, Ore., and Wendel, Calif., where it connects (23 miles east of Susanville) with the Fernley Branch of the Southern Pacific."

The Oregon, California & Eastern arrangement, Mr. Sproule's statement continues, "give the Southern Pacific a substantial stock interest in the Oregon, California & Eastern, which now extends 40 miles from point of connection with Southern Pacific at Klamath Falls easterly to Sprague River, Ore. Completion of the Oregon, California & Eastern, which is a standard-gage line, coupled with conversion of the Nevada-California-Oregon Railway to a standard-gage line, will provide a new artery through southern and central Oregon for through traffic between Oregon and the eastern states. Application will be made in due course for per-

mission and authority to put these plans into effect. These transactions are in accord with the general policy of the Southern Pacific, which looks to the development of the territory it serves, as already shown by the transportation facilities it has provided in Oregon and those now under construction, to which these new additions come in natural sequence."

SOUTHERN RAILWAY.—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has granted authority to issue \$2,000,000 first consolidated mortgage 5 per cent bonds, to be sold at not less than par and accrued interest, for the purpose of refunding a like amount of first mortgage 6 per cent bonds of the Knoxville & Ohio which mature on July 1.

STEWARTSTOWN.—*Lease.*—This company has applied to the Interstate Commerce Commission for authority to acquire the property of the New Park & Fawn Grove by lease.

SUGARLAND.—*Final Value.*—The Interstate Commerce Commission has issued a final valuation report in which it finds the value for rate-making purposes of the property owned and used for common carrier purposes on June 30, 1916, to be \$476,000 and that of the property used but not owned to be \$5,714.

SUPERIOR & SOUTHEASTERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon 13.28 miles of its line.

TOLEDO, PEORIA & WESTERN.—*Tentative Valuation.*—The Interstate Commerce Commission has issued a tentative valuation report placing the final value of the property owned by this company at \$7,118,684 and of the property used at \$6,967,921, as of 1917.

WESTERN PACIFIC.—*Dividends.*—The Western Pacific Railroad Corporation has declared a cash dividend of \$5 on the common stock and a cash dividend of \$1.558 on the preferred stock, payable July 15 to stockholders of record June 30, and a stock dividend of one share of common stock and one share of preferred stock on each 6 shares of common stock now outstanding and a stock dividend of one share of common stock and one share of preferred stock on each 6 shares of preferred stock now outstanding, payable on or after July 15 to stockholders of record June 30. These dividends were authorized at a special meeting of the holders on May 11, as reported in last week's *Railway Age*.

YAZOO & MISSISSIPPI VALLEY.—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has granted authority for the issuance of \$3,493,000 5 per cent improvement bonds, series X, to be delivered at par to the Illinois Central in reimbursement for advances for additions and betterments.

Dividends Declared

Alabama Great Southern.—Ordinary, 3½ per cent, payable June 29 to holders of record May 25. Preferred, 3½ per cent, payable August 17 to holders of record July 13.

American Railway Express Co.—\$1.50, quarterly, payable June 30 to holders of record June 15.

Atlantic Coast Line.—Common, \$3.50, semi-annually, payable July 10 to holders of record June 15. Common, \$1, extra, payable July 10 to holders of record June 15.

Boston & Albany.—2½ per cent, quarterly, payable June 30 to holders of record May 29.

Chesapeake & Ohio.—Preferred, \$3.25, semi-annually, payable July 1 to holders of record June 2.

Eric & Pittsburgh.—1½ per cent, quarterly, payable June 10 to holders of record May 29.

Hocking Valley.—\$2, semi-annually, payable June 30 to holders of record June 2.

North Pennsylvania.—\$1, quarterly, payable May 25 to holders of record May 18.

Pittsburgh, Bessemer & Lake Erie.—\$1.50, quarterly, payable June 1 to holders of record May 15.

Pittsburgh, Youngstown & Ashtabula.—Preferred, 1¾ per cent, quarterly, payable June 1 to holders of record May 20.

Reading.—2nd preferred, 1 per cent, quarterly, payable July 9 to holders of record June 22.

St. Louis-San Francisco.—\$1.25, quarterly, payable July 1 to holders of record June 15.

Southern Pacific.—1½ per cent, quarterly, payable July 1 to holders of record May 28.

Union Pacific.—Common, 2½ per cent, quarterly, payable July 1 to holders of record June 1.

Trend of Railway Stock and Bond Prices

	Last May 19	Last Week	Last Year
Average price of 20 representative railway stocks	80.75	79.83	63.20
Average price of 20 representative railway bonds	91.28	91.26	85.23

Railway Officers

Executive

C. O. Jenks, vice-president in charge of operation of the Great Northern, has been elected also president of the St. Paul Union Depot Company, succeeding **Ralph Budd**, president of the Great Northern, who has resigned. **A. E. Wallace**, general manager of the Minneapolis, St. Paul & Sault Ste. Marie, has been elected also vice-president of the St. Paul Union Depot Company.

Financial, Legal and Accounting

E. T. Miller, general attorney of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., has been promoted to general solicitor, with the same headquarters, succeeding **W. F. Evans**, deceased.

H. L. Utter, secretary and treasurer of the Missouri Pacific, with headquarters at New York, has also been elected vice-president, assistant secretary and assistant treasurer of the Gulf Coast Lines and the International-Great Northern, with the same headquarters. **J. E. Davey** has also been elected vice-president, assistant secretary and assistant treasurer of the Gulf Coast Lines and the International-Great Northern, with headquarters at New York.

Operating

W. W. Berry, inspector of passenger train service of the Northern Pacific, has been promoted to trainmaster on the Rocky Mountain division, with headquarters at Missoula, Mont., succeeding **J. M. Boyd**, who has been granted leave of absence.

W. H. Tobey, division engineer of the Smithers division of the Canadian National, with headquarters at Prince Rupert, B. C., has been promoted to superintendent of the Smithers division, with the same headquarters, succeeding **I. A. Macpherson**, who has been transferred to the Saskatchewan district.

Traffic

H. E. Bailey has been appointed traffic manager of the Jefferson Southwestern, with headquarters at Chicago.

Chas. E. Pierce has been appointed dairy and poultry agent of the Chicago, Rock Island & Pacific, with headquarters at Chicago, Ill.

L. S. Rand has been appointed traffic manager of the Louisiana & North West, with headquarters at Homer, La., succeeding **W. H. Harvey**, resigned.

J. E. Courtney has been appointed assistant traffic manager of the Denver & Rio Grande Western, with headquarters at San Francisco, Cal., a newly created position. **R. E. Knight** has been appointed general agent, freight and passenger department, with headquarters at Atlanta, Ga., in charge of a newly established agency.

J. H. Schultz, general agent of the Chicago & North Western, with headquarters at Boston, Mass., has been transferred to Atlanta, Ga., in charge of a newly established agency. **R. H. Miller**, general agent, with headquarters at Buffalo, N. Y., has been transferred to Boston, succeeding **Mr. Schultz**. **J. P. Fox** has been appointed general agent at Buffalo, succeeding **Mr. Miller**. **F. P. Eyman, Jr.**, has been appointed general agent, with headquarters at Dallas, Texas, and **C. S. Evenson** has been appointed general agent, with headquarters at New Orleans, La., both of these being newly established agencies of the company.

Mechanical

J. H. Reisse has been appointed mechanical inspector of the Chicago, Burlington & Quincy, with headquarters at Chicago.

Engineering, Maintenance of Way and Signaling

Leroy Wyant, acting signal engineer of the Chicago, Rock Island & Pacific, with headquarters at Chicago, has been promoted to signal engineer, with the same headquarters, succeeding **H. F. Lowry**,

who has been granted leave of absence. Mr. Wyant was born on August 14, 1885, at Noblesville, Ind., and graduated at Purdue University. He entered railway service in 1909 in the signal department of the Chicago, Rock Island & Pacific, being employed successively as laborer, wireman and maintainer of automatic block signals. He was transferred to the Chicago Terminal division in July, 1910, and was later promoted to draftsman in the office of the signal engineer.

He was appointed signal supervisor of the Chicago, Indianapolis & Louisville in September, 1912, but returned to the Rock Island in May, 1913, as general signal inspector. He was promoted to superintendent of signal construction in August, 1913, and in May, 1914, was promoted to assistant signal engineer. Mr. Wyant was transferred to Des Moines, Iowa, in 1916 and was promoted to principal assistant signal engineer, with headquarters at Chicago, in 1920. He was promoted to acting signal engineer in March, 1924, in which position he remained until his recent promotion to signal engineer.

Frederick Mears, whose appointment as assistant chief engineer of the Great Northern, with headquarters at Seattle, Wash., was reported in the *Railway Age* of May 16, was born on May 25, 1878, at Omaha, Neb., and graduated from Shattuck School, Faribault, Minn., in 1897. He entered railway service in June of that year on the Great Northern, being assigned to survey and construction work. He was later promoted to assistant engineer and in July, 1905, was appointed assistant engineer on the Chicago, Rock Island & Pacific. In October, 1905, he entered the service of the United States Army and in May, 1906, was appointed assistant engineer of the Isthmian

Canal Commission at Panama. Mr. Mears was promoted to resident engineer of the Panama Railroad in May, 1907, and in December, 1909, was promoted to chief engineer. In 1913 he was appointed also general superintendent. In May, 1914, he was appointed a member of the Alaskan Engineering Commission, on which he served until February, 1918, when he was appointed assistant general manager of the railroad



Leroy Wyant



Frederick Mears

department of the United States Army in the United States and in France. He was later promoted to general manager, which position he held until August, 1919, when he was appointed chairman and chief engineer of the Alaskan Engineering Commission in charge of Alaska railroad operation and construction. Mr. Mears was appointed chief engineer of the St. Paul Union Depot Company in August, 1923, and remained in that position until his recent appointment as assistant chief engineer of the Great Northern.

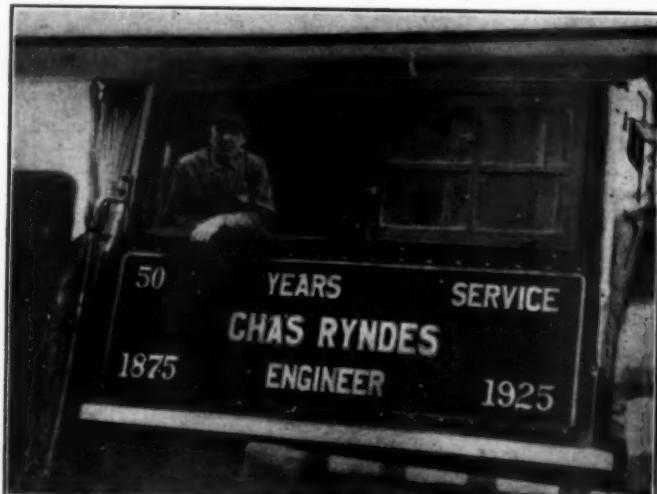
E. W. Leeper, division engineer on the Canadian National, with headquarters at Port Arthur, Ont., has been transferred to the Smithers division, with headquarters at Prince Rupert, B. C., succeeding **W. H. Tobey**, promoted to superintendent.

G. H. Wilsey, principal assistant engineer of the St. Paul Union Depot Company at St. Paul, Minn., has been promoted to chief engineer, with the same headquarters, succeeding **Frederick Mears**, promoted. Mr. Wilsey was born on November 28, 1885, at Lena, Ill., and graduated from the Armour Institute of Technology, Chicago, in 1908. He entered railway service in that year as a draftsman in the bridge and building department of the Chicago, Milwaukee & St. Paul and two years later was employed in a similar capacity in the bridge department of the Chicago & North Western. Mr. Wilsey left railway service in 1911 to become structural designer for D. H. Burnham & Company, architects, of Chicago. He was appointed structural draftsman of the St. Paul Union Depot Company in 1915, leaving that position a year later to become structural draftsman for the Toltz Engineering Company. He was appointed structural engineer of the St. Paul Union Depot Company, in charge of designs and structures, in 1917, and was promoted to principal assistant engineer in 1923. Mr. Wilsey held that position until his recent promotion to chief engineer.

Obituary

J. K. Conner, chief engineer of the Nickel Plate and the Lake Erie and Western districts of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, died at Wabash, Ind., on May 18. Mr. Conner had been in ill health for some time.

THE Isthmus of Tehuantepec Railroad was officially taken over by the Department of Communications of the Mexican government on May 4, 1925. The railroad will henceforth be managed by the director-general of the National Railways of Mexico as a part thereof.



On the Last Trip Made by This Veteran, the D. & H. Had His Locomotive Specially Decorated and Painted His Service Record on the Side of the Cab